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CONTEMPORARY MEDICAL MEN.

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H. W. Acland

CONTEMPORARY MEDICAL MEN

AND THEIR

PROFESSIONAL WORK:

BIOGRAPHIES OF LEADING PHYSICIANS AND SURGEONS, WITH PORTRAITS,

FROM THE

"*PROVINCIAL MEDICAL JOURNAL.*"

EDITED AND EXTENDED BY

JOHN LEYLAND.

VOL. I.

Leicester:
OFFICE OF THE "PROVINCIAL MEDICAL JOURNAL," FRIAR LANE.
1888.

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PREFACE.

THE Medical Biographies contained in this work have appeared, during the last few years, in the *Midland Medical Miscellany* (1882-1885), and subsequently in the same Journal, under its present title of the *Provincial Medical Journal*, accompanied by the likenesses which are here given.

Naturally it was impossible, in the restricted pages of a periodical publication, to impart to these Lives, which were from the hands of many different writers, the fulness and unity of purpose that would be expected in a book of reference and information ; and therefore most of them are now very considerably altered and extended—a great part of the matter is, indeed, new. The object of the Editor, in giving them their final shape, has been to furnish a clear and succinct account of the lives of the Medical Men severally treated of, without trenching upon personal matters which it may be the business of another generation to record. He has endeavoured to present, from the most trustworthy sources, a picture of their life-work, their achievements, and their discoveries ; and the biographical and other particulars have been brought down to a late date. To each Life is appended a Bibliography, which, though in no sense exhaustive, may be found useful, and will further illustrate the work of the Medical Man whose writings it records. It has been compiled from the Catalogues of the British Museum, the "Bibliotheca Therapeutica" of Dr. Waring, the "Index Medicus," the Royal Society's "Catalogue of Scientific Papers," the Indices to the *Transactions* of several learned bodies, and from many private sources of information.

It will be seen that the series, though complete in itself, is so in a limited sense only, and the lives of many leading practitioners will not be found in these pages. This is in the nature of things ; for the two volumes deal only with the Medical Men whose biographies have appeared up to a particular date in the Journal named. The selection is, nevertheless, thoroughly representative of the best workers, both in the metropolis and the provinces, in every branch of Medicine and Surgery.

The story thus begun may be taken up in subsequent volumes, which shall record the life-work of other eminent practitioners of the time.

The Editor has to express his obligations to a large number of professional men who have assisted him at every stage of his work.

Elm Lea,
Forest Hill, Kent,
April, 1888.

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SIR HENRY WENTWORTH DYKE ACLAND,

M.D., F.R.C.P., K.C.B., LL.D., D.C.L., F.R.S.

THE subject of this memoir was born in August, 1815. He is the fourth son of the late Sir Thomas Dyke Acland, Bart., and brother of the eleventh baronet. His education began at Harrow, and, having there spent some years, he proceeded to Christ Church, Oxford, where, in 1840, he graduated in Arts. Already, however, in 1838, a weak state of health had caused him to take a journey to the Mediterranean, which he extended further east, paying three visits to the Troad in that year. The result was the publication at Oxford, in 1839, of his first work, "The Plains of Troy," being a description of a panoramic drawing taken on the spot, which was favourably received by the leading journals.

After having been elected a Fellow of All Souls' College, Mr. Acland began the study of Medicine at St. George's Hospital, and received private instruction from Mr. Bullock, Mr. Squire, and Professor Quekett. He felt keenly, during his residence in London, the difficulties, dangers, and responsibilities of a student's life, and was anxious and energetic in making the path lighter for those who followed in his footsteps. In 1843 he entered the University of Edinburgh, and for more than a year lived with Dr. Alison. In the following year he gained the gold medal, in the class of Medical Jurisprudence, by an essay on "Feigned Insanity." This was not published, but a few copies were printed for private circulation. Having graduated in Medicine at Oxford in 1846, and having gained the Licentiateship of the Royal College of Physicians, Dr. Acland devoted himself to the discharge of the duties of Lee's Readership in Anatomy, to which office he had been appointed in 1845, and at once commenced the formation of the extensive Physiological Series, since removed from Lee's Anatomy School of Christ Church to the Oxford Museum. Of this collection he published a Synopsis in 1853. Meanwhile he had been appointed physician to the Radcliffe Infirmary (1847), and, in the same year, was elected Fellow of the Royal Society, and appointed local secretary to the British Association, when it met for the second time at Oxford.

Dr. Acland has always been an earnest advocate of the claims of the natural sciences as a means of education, and, as early as the year 1848, he drew the attention of the University of Oxford to the duty of introducing the elements of them as a study necessary for all taking the degree of Bachelor of Arts. He believed that the study of the chief laws of the natural world was a most valuable engine for training the mind by way of discipline. Dr. Acland's labours gained for him, in 1878, the much prized dedication of a famous Sermon by Dr. Pusey, in which he is described as having devoted the prime of life to the revival of the study of the Book of God's works in Oxford. He also pressed attention to the necessity of a reconsideration of the responsibilities of the University, as a body having the privilege of granting degrees in Medicine, and of giving licences to practise.

The "Synopsis of the Physiological Series in the Christ Church Museum," alluded to above, was a work of great importance as the foundation of modern biological study on the widest scale. In this work Dr. Acland laid down, what is now generally recognized, that the student of anatomy and physiology should make it his object "to acquire a knowledge of the changes, and of the causes and purpose of the changes, which matter undergoes in its passage through living bodies." With this intention the student must trace the elements of the atmosphere and the earth's crust from their inorganic condition into those states which are capable of exhibiting the phenomena of life, must ascertain in what order the ascent is made from the lowest beings to the higher and more complex, and must learn to distinguish between animal and vegetable life. He must then understand the formation, nourishment, and changes of the living being itself, the forces which are engaged in maintaining the continuance of life, by what steps or circumstances death ensues, and the return of the organic combinations to inorganic constituents in the earth and atmosphere. He must also search out the mental endowments of men and animals, seek the real evidence of consciousness, with its modifications, and enquire how the mental powers of man differ in kind or degree from analagous powers in animals. These mental phenomena he must likewise trace in the changes in the organization of the brain and nervous system. Again the student must extend his view, and learn the relations between the inorganic substances of the earth and the vegetable and animal kingdom, the general nature of the great cosmical arrangements of land, water, temperature, air, climate, etc., and, lastly, in some degree, must learn the changes which our planet underwent in its preparation for man, and the corresponding modifications of fauna and flora which preceded his creation. By these weighty remarks Dr. Acland contributed largely to the great change which has since taken place in the methods and aims of physiological study and biological science.

About this time Dr. Acland was elected president of the Ashmolean Society, and, in 1850, he was made a Fellow of the Royal College of Physicians of London. He now instituted courses of Practical Physiological Instruction, and formed Microscopic classes, which were attended largely by members of the University, and became deservedly popular.

In the year 1854 Oxford was visited for the third time with a severe epidemic of cholera, and the sanitary regulations for the city were placed mainly under the direction of Dr. Acland, who afterwards published an elaborate memoir on the circumstances attending the spread of the epidemic. This is one of the most precise and important of all the local reports on the same subject, and forms a valuable contribution to sanitary science. Some of its statements concerning the sanitary condition of a city so favoured with wealth and learning were startling, and soon led to great improvements. Although Oxford is not a locality suited to afford striking examples of Dr. Farr's rule—that "the elevation of the soil has a more constant relation with the mortality from cholera than any other known element"—this law is nevertheless corroborated by Dr. Acland's observations on the comparatively level district of Oxford and its neighbourhood. "Many of the people of England," he said, with a warning voice, "have yet to awake as from a dream. Though scientific men, aided by the press, have for many years striven to rouse us to a sense of insecurity, the habits of our country, the lengthy labour of discussion which is to be gone through in most public questions, and the precarious results of the votes in public assemblies, retard improvement, and too often insure mischief. From this and other causes we bid fair, when the cholera again appears, in many particulars to be in as great danger as on either previous occasion." This monograph was dedicated by Dr. Acland to Sir Benjamin Brodie and Dr. William Pulteney Alison, from whom he had received instruction during his pupilage, and with whom he always kept up a warm friendship.

Dr. Acland's labours in connection with sanitation and the care of the public health have been earnest and continuous; and his persevering and successful efforts to press upon the Government the consideration of the condition of river basins deserve attention. His "Notes on Drainage, with especial reference to the Sewers and Swamps of the Upper Thames Valley," published in 1857, were intended to demonstrate the great need for action on the part of the Government, or of some body of influential persons, and to point out the profitable methods of utilizing sewage. Later, in his evidence before the Select Committee on the Sewage of the Metropolis, he supported his former statement that "the condition of the Thames Valley was a national disgrace," and contended that the drainage of the basin should be systematically worked as a whole. Afterwards a Royal Commission was appointed to enquire into the question, in 1875. Dr. Acland was a member of the Royal Commission of 1869 to investigate the Sanitary Laws in England and Wales, and had a large share in framing its report. Amongst his many papers on sanitation, his reports "On Cases of Fever in the Parish of Great Horwood," and "On the General Sanitary Condition of Cowley Industrial School," may be mentioned. A great many sanitary and educational services have marked Dr. Acland's career at Oxford. From the year 1847, as has been seen, he had continued to take an active part in the work of reorganising and collecting, in one Museum, with all appliances for making them available, the scientific collections of the University. Few persons are aware of the great amount of labour involved in such an undertaking, and those who now look on the Museum, not only as one of the chief architectural ornaments of Oxford, but also as one of its most necessary institutions, can have but little conception of the opposition which its promoters met with. In this department, indeed, he had performed, on a smaller scale, a task analagous to the gigantic work of Professor Owen in the Hunterian Museum of the College of Surgeons. On the death of Dr. Kidd, in 1851, Dr. Acland was elected Radcliffe Librarian. He brought about, in 1862, the transfer of the scientific books from the Radcliffe Library to the newly erected Museum, and the opening of the building as a public Reading Room. After having lectured for twelve years as Lee's Reader in Anatomy, he became, in 1857, on the death of Dr. Ogle, Regius Professor of Medicine in the University of Oxford, an office which he still holds. He then commenced a Pathological Collection of the new Museum, and effected in 1864 the purchase of Van der Kolk's private pathological museum. He had in the meantime taken a very active part in obtaining new buildings at the Radcliffe Infirmary.

The teaching of Physiology in the Higher Schools has always been looked upon by Dr. Acland as an important part of that training in the natural sciences which he has advocated continuously. In a published letter on the subject in 1858, he said that physiology was the richest of the organic sciences, because in it were found the most remarkable examples of design, contrivance, and law; whence it followed that physiological study exercised the powers of observation, attention, and memory, in a remarkable manner, and to a degree which persons ignorant of it did not understand. Physiological questions, he thought, would become so universally understood in the course of a few years, that much ordinary literature would be incomprehensible to those unacquainted with them, while, at the same time, those versed in them would be better fitted for all public appointments, and the standard of medical knowledge and practice would be proportionately raised. Again, in his evidence before the Public Schools Commission, in 1863, Dr. Acland especially recommended the study of Physics, Chemistry, and Physiology, while at the same time he spoke against any great addition to the work already given to the boys, and expressed his fear that the cramming system might be injurious to the physicians of future generations. Quite recently, too, in an address on "Science for Nobleness, for Knowledge, and for Use," delivered to the students of Bedford College, London, in 1885, he spoke of Medicine in its relation to the education of females. "No Science or Art," he said, "requires more careful or more varied study. Women can master both, without, as experience shows, injury to their more tender nature. In India female Physicians and Surgeons are much needed. In a long conversation, some years ago, with the celebrated Salar Jung, it appeared to me that they should be numbered by many hundreds. But, besides carefully trained practitioners, there are thousands of women needed who have had training in the charge of large bodies of the sick, and in every detail of knowledge needed for the comfort of the hospital, the asylum, the poorhouse, and the sickroom of the poor or of the rich. To the utility of applied natural science in this direction the thoughts of many may be turned. For the full practice of surgery and medicine the discipline and teaching of men and women must virtually be the same."

Dr. Acland was one of the original members of the General Medical Council under the Medical Act passed in 1858. He became President in 1874, and has been twice re-elected. Here, as well as in his place in the University, he has been able to do much excellent work in regard to professional degrees and the education of medical students.

He has presented several valuable memoranda and reports to the Medical Education Committee of the Hebdomadal Council ; and his recommendations had great weight in shaping the present medical training of the University. His presidential addresses to the Medical Council have been replete with varied facts, and give a concise history of the changing conditions of the medical profession in this country. At the meeting in June, 1875, he reviewed the work done by the Council, in which he had had so large a share—the construction of the Register, the removal of offenders from it, the completion of the Pharmacopœia, and the visitation of old institutions. In 1877 he addressed the members on their duty of enabling the public to distinguish between educated and uneducated practitioners, on their responsibility for the teaching and examination provided by the nineteen Licensing Bodies, and their office of watching the progress of events which affect the personal and public health, in consequence of the development of the empire, the demands of civilization, and international intercourse. In subsequent years he has introduced to the Council many weighty and important considerations on medical legislation, the relationship of the several licensing bodies, the education of students, and other points. Before leaving Dr. Acland's work in relation to the general welfare of his profession, mention must be made of an admirable letter on "Medical Education," which he addressed in 1879 to the authorities of the Johns Hopkins Hospital and University. He regarded three distinct qualities of mind as needful for the complete training of a scientific medical man—those fostered by general literary culture, those dependent on special scientific attainments, and those which come from close observation of the living sick, followed or accompanied by investigation of the dead. The organizer of medical education, he said, should aim at securing examinations demanding of the candidates mainly what they should know as practitioners, and of teaching them that which they are to be examined in, so that the full power of the average mind may be evoked in a manly way.

Dr. Acland was attached to the suite of the Prince of Wales on his journey to America in 1860, and, on his return, was appointed Honoray Physician to His Royal Highness. In the same year he was made Honorary Student of Christ Church, and Honorary LL.D. of Cambridge. In the year 1865 he delivered the Harveian Oration at the Royal College of Physicians, for the first time in the English tongue. He took for his general topic the question of how far some points in Harvey's methods of discovery are in accordance with the ideas which the experience of advancing science has taught. He began by enquiring whether Harvey was guided to his discoveries by the idea of Final Causes, and if so, whether the method was safe and proper. After passing in review the opinions of Descartes, Kant, Owen, Herbert Spencer, Darwin, and others, he addressed himself to Comte's argument against Design, as illustrated by the inutility, as the philosopher declared it, of the crystalline lens. This attack on Final Causes he dismissed as failing hopelessly and absolutely, and quoted from Comte himself that the order of nature was far more compatible with the hypothesis of an intelligent will than with that of "blind mechanism." "It is unnecessary," said Dr. Acland, "to add another word. No student of nature worthy the name looks on the problem of this world as other than vast and inexplicable. He pretends no more than to see as by an image, darkly, and to bend before the Cause of all, which is by us unattainable, by us only mediately comprehensible," Dr. Acland concluded that Harvey's scientific methods were strictly right. "Harvey," he said, "believing in God, believed that there is purpose as well as harmony in the material world. He acted in this faith, and, using his reason aright, he made a mighty discovery, which has influenced every biological student to this day, and will influence them to the end of time."

In the year 1867 Dr. Acland was a member of the Cubic Space Committee appointed by the Government to determine the amount of space required in metropolitan workhouse infirmaries. He contributed two valuable papers on Area and on Ventilation to the report, which was published in the same year.

When the British Medical Association held its annual meeting for the third time at Oxford, in August, 1868, Dr. Acland was elected to the chair in succession to Professor Stokes, of Dublin, whose life, it may be remarked, he wrote some time afterwards for the New Sydenham Society. The subject of Dr. Acland's Presidential Address was "The General Relations of Medicine in Modern Times"—its relations to science, in which he vindicated the profession from the one-sided attacks made upon it, founded on the notion that it is wanting in scientific precision, and its relations to humanity, wherein he dealt with the great social problems with which Medicine is concerned.

In 1871, was published his useful volume on "National Health"—its foundations, how they are sapped, and how strengthened—at the desire of the President and Council of the Royal College of Surgeons, it having been delivered as a lecture before the College. It may here be mentioned that for a period of more than thirty years Dr. Acland was Physician to the Hospital at Oxford. A list of his published works is appended: of these his sympathetic biographical sketch of Sir Benjamin Brodie, and his lectures on Village Health and Village Life, written for the International Health Exhibition of 1884, may be specially mentioned.

Sir Henry Acland is one of the few medical men out of the military profession honoured by the State. For his great services to the profession and to science generally he was created a Companion of the Bath (civil) in the year 1883, and, in 1884, was gazetted a K.C.B. and received the honour of knighthood. He is an Honorary LL.D. of Cambridge and Dublin, D.C.L. of Durham, Honorary M.D. of Trinity College, Dublin, Honorary Physician to the Prince of Wales, Regius Professor of Medicine, Radcliffe Librarian, Honorary Student of Christ Church, Fellow of the Royal Society, Hon. Member of Medical and Philosophical Societies in Philadelphia, Christiania, and Athens, K.C.R. in the Empire of Brazil, and President of the Medical Council of the United Kingdom, besides being a member of many learned societies. Sir Henry married, in 1846, Sarah, daughter of the late William Cotton, Esq., D.C.L., F.R.S., of Leytonstone, Essex, who died in October, 1878, and he has, living, six sons and one daughter.

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ALFRED CARPENTER,

M.D., M.R.C.P., M.R.C.S., L.S.A., J.P.

THE aim of Dr. Alfred Carpenter's professional life has been to popularize the knowledge of sanitary science, and to instruct the masses of the people in the best ways of obtaining and preserving health. He has recognized the mission of medicine in the prevention of disease as well as in its cure; and his labours in sanitation have been fruitful in removing many evils with which neglect and ignorance have afflicted humanity.

Dr. Carpenter was born at Rothwell, Northamptonshire, on May 28th, 1825, his father being a medical practitioner of that place, to whom, after finishing his general education at the Grammar School at Moulton, in Lincolnshire, he was apprenticed at the early age of fourteen. Two years later he became a pupil of the late Mr. W. Percival, at the Northampton Infirmary, where he remained for three years, returning, at the expiration of that period, to Rothwell, to assist his father. While with him, he had entire charge of nine parishes, and, on leaving, received a testimonial from the guardians of the Kettering Union. Afterwards, he became assistant to the late Mr. J. Syer Bristowe (father of Dr. J. Syer Bristowe, of St. Thomas's Hospital), in Camberwell; and, in 1847, still retaining his post as assistant to Mr. Bristowe, entered as a student at old St. Thomas's. He was the first student who gained a Scholarship at that Institution, and he also held in succession the posts of Resident Accoucheur and House Surgeon there. He became a Member of the Royal College of Surgeons of England, and a Licentiate of the Apothecaries' Society in 1851, and, in 1852, established himself in practice in Croydon, where he has continued to reside up to the present time, and where a great deal of his experience in sanitary science has been gained.

Mr. Carpenter passed the M.B. of London in 1855, and the M.D. in 1859, some time, therefore, after he had entered into practice. In 1860 he became medical attendant upon Dr. Sumner, Archbishop of Canterbury, and has since been medical adviser in succession to Archbishops Longley and Tait. He attended Mrs. Tait during her last illness in Edinburgh, and is frequently referred to in that interesting work, "Catharine and Craufurd Tait: a Memoir." He is now medical adviser to Archbishop Benson, and has thus attended four Archbishops of Canterbury in succession.

Yours very truly.
Alfred Carpenter

In 1859 Dr. Carpenter was appointed a member of the Croydon Local Board of Health, on which he continued to serve until his election as President of Council of the British Medical Association in 1879. In 1859, too, he published a short monograph on "Sanitary Progress in Croydon," which was but the prelude to practical work in the same direction.

Dr. Carpenter's connection with the Local Board of Health has indeed been fruitful of results in the interests of sanitary science. He was principally instrumental in the extension and successful working of the Croydon Sewage Farm, whereby the principle of sewage irrigation was demonstrated to be a practicable and advantageous solution of the great sanitary question of the day—the proper and advantageous disposal of the sewage. Originally only thirty-six acres in extent, the farm now covers five hundred and sixty, and, during Dr. Carpenter's tenure of office as chairman of committee, it produced the largest return at the smallest expense recorded since its establishment. Dr. Carpenter has often reiterated the statement that a sewage farm should entail an addition of twopence in the pound on the parish rates, but that it need not do more, and could scarcely do much less. It is now twenty years since he first supported the utilization of sewage by sewage farming at the Sewage Congress held at Leamington; and the appended bibliography will show that he has frequently since treated the subject in his writings and public addresses.

The theory of sewage irrigation Dr. Carpenter holds to be that, the sewage of a town being applied to land, the rootlets of the growing crops will seize upon the mischievous elements it carries, will change their chemical forms, fix a portion of the elements in the plant, and render the rest comparatively harmless. "The great principle to be kept in view," he says, "is, first, that the sewage shall be applied fresh to the soil; secondly, that it be kept as near to the surface as possible, so that it may be brought at once in contact with the spongioles of the growing crop, and be altered in its chemical character before it can get into the underground water." Dr. Carpenter was struck with the marvellous action which he saw going on at the sewage farm, and with the magnetic or vital power of the rootlets of rye-grass to detain and absorb all organic germs in the sewage. The fibrillæ of the rootlets are to be seen in a wonderful state of activity as the plants near the time for flowering; and, when a stream of sewage approaches them, they open out, as it were, just as the sea-anemones do to the advancing tide, and appear as if they sought for food. At the same time there is a rapid rise of liquid in the parenchyma of the plant, which liquid is not sewage. At the International Medical Congress held in London in 1881, Dr. Carpenter read an interesting paper on sewage irrigation, which gave the result of his long experience on the Croydon Sewage Farm. He brought evidence to show that the application of sewage to land continuously in close proximity to dwelling-houses is not injurious to the health of the inhabitants. "A district," he rightly said, "which shows an average death-rate of 14.3, and an average birth-rate of 32.6, cannot be seriously affected by any great and overwhelming nuisance." Again he maintained that the judicious application of sewage to land would satisfactorily cleanse the effluent water from that land, and fit it for discharge into any ordinary stream; and that the vegetables produced from fields continuously irrigated by sewage are satisfactory articles of food, so that animals fed on sewage food are as healthy as any others. "There is not," he says, "a particle of evidence to be obtained in support of the idea, once generally entertained, that sewage farms would spread parasitic complaints." In fact, Dr. Carpenter contends, and brings evidence to prove, that the changes which take place in sewage kept in motion, and brought early into contact with soil and vegetable life, are in a direction contrary to that necessary for the development and spread of zymotic disease; for the excreta of persons suffering from such disease are rendered non-infectious when distributed on a sewage farm. Dr. Carpenter has likewise laid stress on the practical aspects of the question from the economic point of view; and the returns which have been made show unquestionably that sewage farms are peculiarly productive. The most recent paper on the subject was read to the Society of Arts on February 2nd, 1887.

In many other directions Dr. Carpenter has been active in his care of the public health. Thus the public baths at Croydon were established by him at no little trouble and expense; and to his exertions, in spite of great opposition, is due the ventilation of the sewers, which he was the first to insist upon as a duty that should be carried out by the local authority. This subject was discussed in the *Times* on the occasion of the Prince Consort's death, and again during the illness of the Prince of Wales; and on each occasion Dr. Carpenter's letters were referred to in leading articles as pointing out the right way of dealing with the subject. The matter was further brought forward by him in a paper read before the Social Science Association, in which he urged that the principle of the free ventilation of every soil pipe, and of openings in the public sewers at intervals of not less than 100 feet, together with the complete separation of all bath, sink, and other waste pipes from the sewer, was an indispensable condition of public safety. Though strongly opposed on their first promulgation, these principles are now fully acknowledged.

The causation of enteric fever, and its connection with the water supply, have also engaged his attention, and Dr. Carpenter holds that this disease can be, and is often, produced by foul sewer air, as well as by impure water, an opinion which the experience of the town of Croydon fully confirms. On this subject he read a paper before the Health Section of the Social Science Congress, at Bristol, in 1869. The epidemic of Typhoid, which broke out in Croydon in 1875, was foretold by Dr. Carpenter, who warned the local authorities that it would certainly happen if they continued to give an intermittent water supply by means of fittings designed for a continuous service. His admonitions were laughed at, and, on the outbreak of the fever, public opinion was instigated against him, because it was said that his denunciations exposed the town to loss in consequence of the exodus which took place. One good result, however, followed. The Local Board adopted the means proposed for removing the cause of the disease ; and they were afterwards endorsed in the report to the Local Government Board on the rise of the epidemic, and the means to be adopted against its recurrence.

Dr. Carpenter's contributions to the literature of sanitary science are numerous, and are admitted to be very valuable, because they spring from practical experience. His "Hints on House Drainage," printed in 1866, passing through three editions, was intended to draw attention to the evils which flow from defective drains, and to show the proper construction of sewers, cisterns, and sinks. He likewise advocated the formation of administrative areas for sanitary purposes, with a medical officer of health for each, as the most efficient machinery for sanitary work, and also the giving of sanitary training in elementary schools. "To instruct the children," he says, "how to wash, and to see that it is done ; to keep their hair tidy and clean, their clothes clean and free from raggedness, would be a far greater boon to them, both in the present and for the future, than to teach them the distance of Canton from London, or that the planet Jupiter has four moons." Again, a course of lectures which Dr. Carpenter delivered to the students of St. Thomas's Hospital, in 1876, was chiefly directed to the subject of sanitation. "I propose," he said with much humour, "to point out how such measures are to be certainly secured as will assist to abolish a large portion of the ordinary work of the general practitioner, and to diminish the calls which are constantly made upon him for professional services, by the prevention of at least one-half the common ailments of daily life." With this object he began by speaking of the atmosphere and its impurities, as well as ventilation, and proceeded to the water supply, its sources and pollutions, and to the sewerage and its relation to health. Dr. Carpenter also, in 1879, addressing the Sanitary Institute of Great Britain, at its Croydon meeting, indicated the appointed purpose of the sanitary authority, *viz.*, "the limitation of the effects of disease upon organic life," and urged that these effects were produced by particulate matter—"living particles"—which must have their own lair for the purposes of development, growth, and reproduction. A year later he drew attention, at the Cambridge meeting of the British Medical Association, to the defects which existed in the popular application of the details of sanitary work ; and, recently, he has read a paper before the Association of Public Sanitary Inspectors on "Sanitary Legislation." It may be appropriate here to state that some time ago Dr.

Carpenter suggested the co-operation of sanitary workers, which is now about to be accomplished by the amalgamation of the Parkes Museum with the Sanitary Institute of Great Britain. When he was Chairman of the Council of the Sanitary Institute he succeeded in bringing about the republication, in a volume, of Dr. Farr's "Vital Statistics;" and to him is also due the reprint of John Simon's works relating to the the Public Health, which will be issued shortly from the same source. About four years ago Dr. Carpenter was appointed, by the *Senatus Academicus* of Cambridge, Examiner in Public Health for the University, and for several years he held a similar appointment at the University of London.

Throughout his life Dr. Carpenter has been an earnest advocate of the cause of temperance, for, though not considering that the use of wine and its allies is sinful or necessarily disease-provoking, he has long recognized that many of the diseases which, as a worker in the field of preventive medicine, he has attempted to ward off, have their root and development in the misuse of alcohol. In an oration to the members of the Medical Society of London in 1878, Dr. Carpenter spoke of alcohol as a food, as a medicine, and as a poison, and reviewed the evidence which has been produced by the different schools of medical thought on the question. His own position was that alcohol might, under certain circumstances, be useful as a luxury, though the evil is great, and the resulting good very small. The lighter wines, he thought, and the weaker beers, might be taken with impunity; they might even assist digestion, and be of advantage with, or immediately after, food. If taken with other food, when great exertions were being made, and when there was a call upon the stomach for fuel to supply waste of tissues, there was sufficient evidence to show that they enabled the machine to obey that call with better effect than would have been the case if stimulants had been altogether withheld; but, if the effort were continued from day to day, beyond the ordinary capacity of the machine, and if that effort were sustained by more fuel in the shape of stimulant, the human machine, like all others, must wear out sooner than it would otherwise do. Alcohol, he considered, might be given medically, in moderation only, in cases of prostration from shock, and the prostration which follows acute diseases, after such had expended their force, but that its continuance as a remedy was fraught with danger to those who took it. There was also a class of persons, he said, to whom alcohol might be useful even in comparative health, those in whom the powers of life had begun to decay, and with whom the force of the heart was not enough to transmit the blood to the extremities of the body. In concluding, he remarked that alcohol, in any of its forms, might be a good medicine, but that it is a bad diet, and that its action as a poison is visible among all ranks of society. In the year 1885 Dr. Carpenter read a paper before the Hunterian Society on "The Place which Alcoholic Drinks should occupy in the Treatment of Disease," wherein he described their physiological action upon the organs of the body, and the uses to which the physician may put them. Dr. Carpenter's latest work connected with Temperance was his active interest in the promotion of the Temperance Congress, held at Croydon in 1886, when he was president of the Health Section. In his address he again traced the physiological action of alcohol, and its relation to public health, concluding that the effect of intoxicating liquors is not consistent with the uses to which they are now put by the public and the medical profession.

Dr. Carpenter became a member of the Council of the British Medical Association in the year 1873, having acted as President of the South Eastern Branch in 1872. He at once entered into active business connected with its management. He pressed upon the attention of the Council the difficulties in which they were placed from want of a legal position, enabling them to sue and be sued; and he was one of those who assisted in framing the Articles of Association under which the body was incorporated, and which have led to its present prosperous financial state. He was elected to the office of President of the Council at the Bath meeting in 1878. He filled that office for the statutory three years, managing the affairs of the Association during the annual meetings at Bath, Cork, and Cambridge, the two latter being among the most successful meetings which are to be found recorded in the annals of the Association.

Some of the most important steps in the progress of the Association were made, during the three years of his Presidentship of the Council, with the assistance of Dr. B. Foster, M.P., who is, at this time, its President. He commenced an agitation in the Council for its own reform, which ended in an entire re-organization of the mode of election of representatives, and brought the Council into direct contact with the general body of members.

He was one of the first of its members to take action upon the treatment of habitual drunkards, and he was for many years Chairman of the Committee. In concert with the Social Science Association and Dr. Cameron, M.P. for Glasgow, he promoted the Habitual Drunkards Act of 1879, having read papers upon the subject for the Social Science Association in 1876. He acted with Dr. Norman Kerr in regard to the measures which were necessary to give effect to the Act, and for some time was chairman of the Dalrymple Home Association. Dr. Kerr ably seconded the efforts which were made by the British Medical Association, and the Dalyrmple Home at Rickmansworth is the outcome of their activity in this direction. In 1881 Dr. Carpenter was elected a Vice-President for life of the Association. He was an active member of the General Committee for the Health Exhibition, and took an active part in the Conferences which were held upon Health subjects. He has always had views upon the right of the State to enforce the notification of disease to the local authority, which are opposed to those held by many medical officers of health. He would not make it compulsory upon a private medical attendant to notify, believing that it is no part of the right of the State to make a medical man one of its officials, whether he will or not. He has also brought this subject before the Social Science Association and the British Medical Association.

He was one of the members of the British Medical Association who pressed upon the attention of the examining bodies the necessity of providing examinations in State Medicine, and it was mainly in consequence of those representations that the Universities instituted the State Medicine Examinations, and Dr. Carpenter was one of the first to present himself for the Sanitary Science Certificate at Cambridge. Dr. Carpenter says he chose that examination, in preference to that of his own University, because its syllabus was framed upon the most liberal principle, viz., that it did not matter where a man obtained his knowledge, provided he possessed it, the examination being practical and thorough.

Dr. Carpenter's great knowledge of public affairs caused him to be appointed to the Commission of the Peace for the county of Surrey in 1870, and he has since been active on the bench in enforcing the Adulteration of Food Act, and in generally looking after the conditions of public health. He thus became very popular in the county ; and, at the General Election of 1885, was asked to contest the Reigate Division in the Liberal interest, which he consented to do. He was, however, defeated, after a fair fight, by his opponent, Sir Trevor Lawrence ; but, so highly were his services to his party appreciated, that the Liberal electors of the Division presented him, at a public meeting held at Reigate on April 15th, 1886, with a beautiful silver fruit service and salver as a token of their regard. Again, in the General Election of 1886, he endeavoured, in the "Gladstonian" interest, to wrest the seat of North Bristol from Mr. Fry, the sitting member, a "Unionist," but was unsuccessful.

Every movement in his own neighbourhood for the advancement of Science and Literature has found in Dr. Carpenter a warm supporter. He has been connected with the Croydon Literary and Scientific Institution for thirty-four years, and was instrumental in transferring it from its old and humble quarters to the Public Hall, whose very existence is a monument to his exertions. Besides the energy he showed in enlarging the Institution, and enlisting the sympathies of his fellow-townsmen, he surrendered a piece of land as a site for the new Public Hall, on which he had previously intended to erect a dwelling-house for himself. These services were recognized by a testimonial from his fellow-townsmen in the shape of a handsome watch and chain. Dr. Carpenter has since engaged in a further attempt to increase the usefulness of this Institution by the establishment of museums, etc., for which purpose he set himself to collect, not without considerable success, the sum of £5,000. Upon this the members of the Institution commissioned Mr. E. Roscoe Mullins to execute a bust of him, to be placed in the Public Hall at Croydon, which was exhibited at the Royal Academy in 1886. Dr. Carpenter has several times been president of the Institution. He has also occupied the presidency of the Croydon School of Art—(which, at the present time, thanks to his exertions, is in a most flourishing condition) ever since its establishment—of the Microscopical Club and Natural History Society, and of the Croydon Temperance Society. He took a most active part in the institution of the Croydon Cottage Hospital, and, indeed, bore a large share of the preliminary expenses entailed thereby. He has more recently established the Croydon Provident Dispensary, which is entirely self-supporting, in connection with the Metropolitan Provident Institution, of which body he was a managing director, associated with the late Sir C. Trevelyan and Mr. Stansfeld. He had also published to the Archæological world a view as to the origin of the name of Croydon, which he associates rather with the first preaching of Christianity in England than with the neighbourhood of the place to chalk hills.

Dr. Carpenter's professional offices have been numerous. In 1878 he was Orator to the Medical Society of London, and took, for the subject of his oration, "Alcoholic Drinks," as is stated above. He was a member of the Health Committee of the Social Science Association for many years, and its Transactions, as has been shown, testify to the work which he has done in papers connected with sewage utilization and sanitary measures generally; while, as a member of the Sanitary Institute, and, more recently, as Chairman of its Council, he has materially aided the end in view. He was President of the Health Section at the Croydon Sanitary Congress in 1872, and presided in the Domestic Health Section at the Brighton Congress, when the Dome of the Pavilion was densely crowded to hear his address. He was also a member of the Royal Commission for the consideration of Small-pox Hospitals, and took a very active part in the drawing up of its report; and was President of the Section of Public Medicine at the Jubilee Meeting of the British Medical Association at Worcester. He has acted for some time as one of the Committee for dispensing the proceeds of the British Medical Benevolent Fund, and is now, as one of the County Magistrates, a Manager of the Cane Hill Lunatic Asylum, near Croydon, which has 1100 patients. In addition, he has acted for four years as a member of the Court of Examiners of the Apothecaries' Company. He has been for some years annually elected to the important office of Chairman of the Whitgift Foundation. This Corporation has established two large schools in Croydon for boys, and has large estates under its control.

The great number of literary contributions which have appeared in all kinds of periodicals during the past twenty years from Dr. Carpenter's pen, indicate an industry which few have excelled, while, in his practice, he has met with an unusual amount of success ; for, commencing with a capital which consisted of brain work alone, he has earned a competence that enabled him to retire from general practice in 1882, when he was admitted a member of the Royal College of Physicians, and devoted himself to consulting work, as less laborious, if less remunerative. At the same time his contributions to the Science of Medicine, and his public benefactions to the town of Croydon, have secured him an honourable and enviable position both among his colleagues and the public at large.

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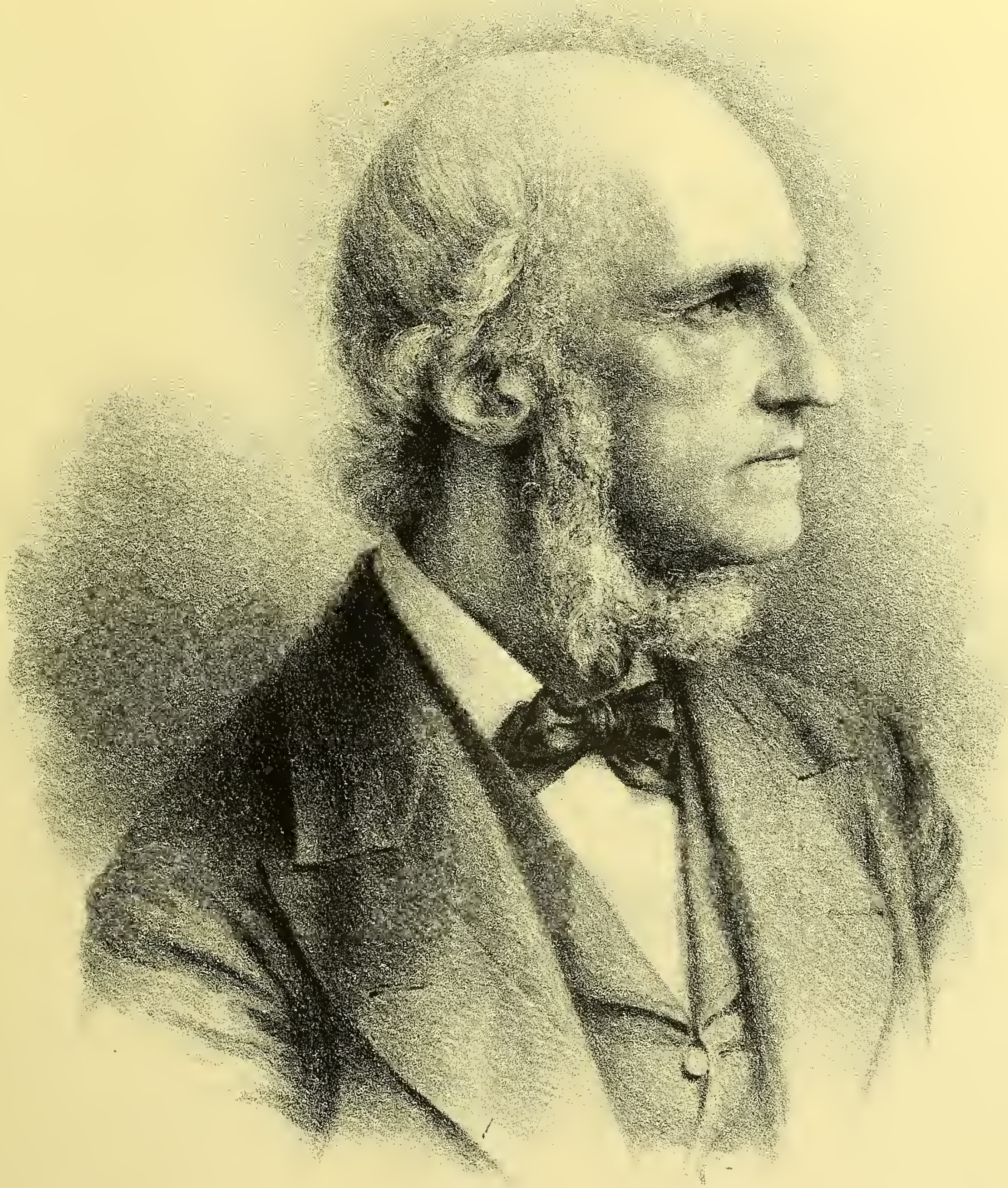
WILLIAM BENJAMIN CARPENTER,

M.D., M.R.C.S., L.S.A., LL.D., F.R.S., F.L.S., F.G.S., C.B.

THE eminent physiologist, biologist, and microscopist, whose name is at the head of this paper, occupies a remarkable position in the history of modern science. Standing midway between the old school of natural philosophy and the new, gifted, through his lucid method of thought and expression, with the power of popularizing scientific knowledge amongst the people, and being of a devotional spirit and strong in religious faith, and an ardent lover of biological enquiry also, he did perhaps more than any other man to bring the old and the new, the learned and the unlearned, and the votaries of science and religion together. Although Dr. Carpenter built upon the old foundations, he was ever in the forefront of discovery; to him we owe, in great part, the modern development of physiology, the growth of microscopical research, and the enquiry into the biology of the deep sea, and the configuration of its bed, as well as several remarkable advances in palæontology. These circumstances, coupled with his many-sided ability and far-reaching influence, give him a high place in the ranks of contemporary medical men.

William Benjamin Carpenter, the eldest son of Dr. Lant Carpenter, of Exeter, was born in that city in 1813. His father gained a reputation as a writer, teacher, and philanthropist, and his eldest sister, Mary Carpenter, who died in 1877, became well kown as a worker for the reform of criminal children, the elevation of women, and for other great social problems. In the year 1817 Dr. Lant Carpenter removed to Bristol, and it was there that his son began his education, learning his Latin grammar at five, and imbibing a strong taste for classical studies. As the boy grew in years he became wishful to adopt the profession of civil engineering; but this design he relinquished when an opportunity presented itself to him, through the friendship of Mr. Estlin, a medical man of Bristol, of entering the medical profession. His medical education began at the Bristol School of Medicine; and he worked under the direction of Mr. J. B. Estlin, with whom, about that period, he sojourned some time in the West Indies. Shortly afterwards, in 1833, he went to London and attended at University College and the Middlesex Hospital. There he first engaged in the study of comparative anatomy, which he subsequently made peculiarly his own, and he frequently attended as many as thirty-five lectures a week, and was distinguished



Yours truly
William B. Carpenter.

by great industry and close application. He was admitted a Member of the College of Surgeons, and a Licentiate of the Society of Apothecaries, in 1835, and shortly afterwards proceeded to Edinburgh, where he pursued his studies further in physiology, and devoted himself to researches on the nervous system. One of his first papers was on "The Unity of Function in Organized Beings;" and there were others on similar subjects. While in Edinburgh he joined the Royal Medical Society, of which he became President in 1837, and, in the same year, the Medical Faculty of the University awarded him the annual Student's Prize for an essay on "The Laws Regulating Vital and Physical Phenomena." This paper was afterwards extended and developed in Dr. Carpenter's "Principles of General and Comparative Anatomy."

In the same year also he accepted the post of Lecturer on Medical Jurisprudence at the Bristol Medical School, and established himself in practice in that city. In 1839 Mr. Carpenter took the degree of Doctor of Medicine at the University of Edinburgh, his doctor's thesis being an essay on "The Physiological Inferences to be Deduced from the Structure of the Nervous System of Intervertebrated Animals." This thesis, which had previously been read before the Royal Medical Society, was awarded a gold medal by the Senatus Academicus of Edinburgh. Certain views were maintained therein in regard to the reflex function of the ganglia forming the gangliated cord of articulated animals, which evoked a controversy, but Professor Owen afterwards adopted them, and they are now widely held. They testified in a marked degree to Dr. Carpenter's penetrating intellect, and to the mastery which he had acquired over the complex anatomy of the nervous system.

But, meanwhile, Dr. Carpenter had been working chiefly in the field of comparative and general physiology. He possessed a philosophical knowledge of nature, and a great grasp of the mass of details which he had collected; but it needed all his clear and lucid method in those times to educe a system which should show the structural analogy between the animal and vegetable kingdoms. This was one of the tasks he set himself in his "Principles of General and Comparative Physiology," published in 1839. The work was dedicated to Sir John Herschell, whose "Discourse on the Study of Natural Philosophy," Dr. Carpenter was wont to say, had, with Lyell's "Principles of Geology," exercised a great influence over him. The book met with a very cordial reception, and has continued to hold a most exalted position down to the present time.

In the following year Dr. Carpenter married Miss Powell, daughter of a deceased merchant of Exeter, and grand-daughter of Henry Cort, whose invention of iron-puddling gave a great impetus to the British iron trade. The union was a happy one, and Dr. Carpenter was fortunate in his domestic life. At this time he resigned his post of Lecturer on Medical Jurisprudence at the Bristol School, but only to take that of Lecturer on Physiology ; and, in order that he might have more leisure for study and research, he also relinquished the practice of his profession. In fact, he had found himself highly susceptible to its anxieties and responsibilities.

Dr. Carpenter now divided his work on General and Comparative Physiology into two portions ; and the treatise on "The Principles of Human Physiology," which was issued in 1842, was his most important contribution to medical literature, and has, perhaps, exerted a greater influence on the progress of physiological science than any other book of the century. With an astonishing power of work, and a no less surprising capacity for marshalling facts and selecting information, the indefatigable author was also engaged at this time on his "Cyclopædia of Natural Sciences," of which five volumes were issued in the years 1841 to 1844—including those on "Animal Physiology," "Mechanical Philosophy, Horology, and Astronomy," "Vegetable Physiology and Botany," and "Zoology." In these works Dr. Carpenter set himself the task of popularizing learning scarcely then accessible to the public, his method being the "exposition of the *principles* of science in their simplest form, and the illustration of these by the most useful and interesting examples."

The microscope had also for some time occupied his attention, and he presented in 1844 a report on the microscopic structure of shells to the British Association, which foreshadowed his future reputation as a microscopist. In the same year he was appointed Fullerian Professor of Physiology to the Royal Institution, and gained the coveted distinction of the Fellowship of the Royal Society. At this time also he contributed to the *Inquirer* a series of important papers on "The Connection of Science and Religion," in which he expressed a belief in the reign of law that enabled him to regard miracles as part of the order of nature, and as the manifestation of a higher power than any of a physical nature known to us. Dr. Carpenter's prolific pen had now made him well known both in England and abroad, for some of his writings had been translated into German, and he was wont to say with pride that at about this period Von Baer, the celebrated embryologist, read one of his physiological treatises on the shores of the Caspian Sea.

After a short residence at Ripley, in Surrey, Dr. Carpenter's growing reputation induced him to settle in London, whither he went in 1845, and at once found his vocation as a teacher of his own profession. He was appointed co-lecturer with Mr. Adams on Anatomy and Physiology at the London Hospital Medical School in this year, which post he held until 1857. Two years later (in 1847) he became Examiner in Physiology and Comparative Anatomy at the London University, and was also elected to the Swiney Lectureship on Geology, which he held twice. To these was afterwards added the Professorship of Medical Jurisprudence at University College, an office which he filled for ten years, being made meanwhile Principal of

University Hall. In some of these experiences Dr. Carpenter became familiar with the laws of evidence, and with the conditions of mind that predispose to erroneous judgments, a knowledge which afterwards bore fruit in his essays on spiritualism, mesmerism, and other kindred subjects. His learning on these matters and on the affections of the nervous system, as well as on general physiology, enabled him, in the year 1849, to gain a prize for an "Essay on the Use and Abuse of Alcoholic Liquors," which was published in the following year—a comprehensive work wherein he treated the matter with great judgment, and illustrated its lessons very lucidly. He did not express himself finally either for or against total abstinence, though he strongly favoured the former, but he examined the uses and abuses of alcoholic stimulants, and carefully pointed out the instances in which they might be admissible, and useful in the treatment of disease. Later, Dr. Carpenter was obliged, by severe illness, to take a moderate amount of stimulant, but he was always an ardent advocate of temperance.

Another literary work that occupied him at this period was the editing of the *British and Foreign Medico-Chirurgical Review*, which he undertook in 1847, and held until 1852, with conspicuous success. His profound knowledge of the nervous system enabled him, in a remarkable review of Noble's "Physiology of the Brain," to deal a final blow at the expiring belief in phrenology, while, at the same time, he demonstrated the reflex nervous function of the centres of sensation and ideation, and enunciated the now established belief in "consensual" and "ideo-motor" action. A curious effect of this article was that it induced Dr. Noble to renounce the chief theories his book had been intended to uphold. Dr. Carpenter's growing love of abstract, and sometimes metaphysical studies, caused him at times to soar into regions where the less intrepid would scarcely follow him, but in general his speculations were well founded. It was not without hesitation that a paper he prepared in 1850, applying the doctrine of Grove on the correlation of the physical forces to the so-called vital force—wherein he arrived at the scientific truth now accepted under the name of "conservation of energy"—was published in the *Philosophical Transactions*. A lecture which Dr. Carpenter delivered at the Royal Institution on March 12, 1852, shows clearly the nature of his researches at the time. This was on the ideo-motor principle of action, which he applied to the explanation of many phenomena that have been a source of perplexity, because they could not be reconciled with any known laws of nervous action, but which, he stated, were dependent on the state of *expectant attention* on the part of the performer, whose muscles would act involuntarily, without the intervention of the will. Dr. Carpenter has, indeed, arranged systematically the morbid phenomena of the nervous system, apparent in electro-biology, thought-reading, and spiritualistic manifestations, in his work on "Mesmerism, Spiritualism, etc., Historically and Scientifically Considered." Meanwhile the treatises on Physiology were going through fresh editions, in the light of the author's later studies; and, in 1856, his microscopical work took shape in "The Microscope and its Revelations," a one-volume book, which has been invaluable to amateur microscopists, and has had a fructifying influence throughout the country, in bringing many workers to the help of science.

Hitherto Dr. Carpenter had been compelled, to some extent, to devote himself to teaching and working for the sake of the remuneration attendant upon them; but his appointment as Registrar of the University of London in 1856—an office he held, with the greatest advantage to the University, for twenty-three years—left him free to follow his own inclinations, and he devoted himself thenceforth for some time to the study of the Foraminifera, on which his researches were of permanent value. The result of this enquiry was the publication, from 1856 to 1860, of four memoirs on the Australian and Phillipine Foraminfera in the *Philosophical Transactions;* and the Ray Society, in the year 1862, issued his "Introduction to the Study of the Foraminifera"—a beautiful folio work which has formed the basis of all subsequent research. In these papers Dr. Carpenter insisted that the Foraminifera have not progressed in organization since the far-distant Laurentian epoch, a fact, however, which Darwin did not regard as "an insuperable difficulty" in his hypothesis of development through natural selection and the survival of the fittest. Considerable discussion, concerning the organic nature of *Eozoon Canadense*, which Dr. Carpenter had discovered in the Laurentian formation of Canada, followed the publication of his essays on the Foraminifera. It may be well here, anticipating chronological order, to sum up the great microscopist's subsequent work in the domain of minute biology. About the year 1866 he published, in the *Philosophical Transactions*, a paper on "The Structure etc., of *Antedon rosaceus*" (Comatula, Lamarck)—a subject he also treated in the *Proceedings of the Royal Society*—and it is now admitted that Dr. Carpenter discovered, in Comatula, a peculiar form of nervous system, which, at the time, was hotly contested. His last paper in the *Philosophical Transactions*, a few years ago—on Orbilites—will be remembered; and, at the time of his death, he was still busily engaged on an essay on *Eozoon Canadense.*

We now reach another most important part of Dr. Carpenter's scientific work. He had already applied himself with great earnestness to the question of marine zoology, and had spent many vacations in Arran and elsewhere, studying the structure of the feather-stars, when he was asked to work with the "Lightning" expedition of 1868, which he accompanied, along with Professor (now Sir Wyville) Thomson; and he was further engaged, up to 1871, upon the "Porcupine" and the "Shearwater," under Government. He was thus fully occupied in deep-sea biological researches, and in a study of the question of oceanic currents. His "Reports on Deep Sea Researches" were published in the *Proceedings of the Royal Society* from 1869 to 1872, and he published elsewhere numerous papers on the configuration and biology of the great oceanic areas. Dr. Carpenter's interest in these questions was very great, and, in June, 1871, he presented to Mr. Goschen, First Lord of the Admiralty, a scheme he had formed for a scientific circumnavigation expedition. "Its object should be," said Dr. Carpenter, "the extension to the three great oceanic areas—the Atlantic, the Indian and Southern, and the Pacific—of the Physical and Biological Exploration of the Deep Sea, which has been tentatively prosecuted by my colleagues and myself during a few months of each of the last three years, on the eastern margin of the North Atlantic, and in the neighbouring portion of the Mediterranean." He expressed his belief, in the paper, "that the wider extension and systematic prosecution of them will be fruitful in such a rich harvest of discovery as has been rarely reaped by any scientific enquiry," and also that "the key to the interpretation of much of the past history of the globe is at present lying at the bottom of the sea." The result of this communication was the fitting-out of the "Challenger" expedition, which left Sheerness on December 7th, 1872, and returned to Spithead on May 24th, 1876, after having traversed a distance of nearly 70,000 nautical miles. This expedition justified Dr. Carpenter's forecast, and he considered its chief work to be on the depth and configuration of ocean-basins, the thermal stratification of the sea, the gulf-stream, the condition of Antarctic icebergs, and the animal life of the deep sea.

In 1871 Dr. Carpenter became President of the British Association; and, at its Edinburgh meeting in that year, the Honorary Degree of LL.D. was conferred upon him by the University there. In the following year he presided at the Brighton meeting of the Association, and, in his address, called the attention of the scientific world to the fact that force and not matter is our primary cognition. Not long after, Dr. Carpenter's services to science, and through science to humanity, were recognized by Her Majesty, who elevated him to the rank of Companion of the Bath.

His long study of mental phenomena was at last to take permanent shape. Already, in the fourth and fifth editions of the "Principles of Human Physiology" (1852 and 1855), he had given an outline of Psychology, which was now expanded into the "Principles of Mental Physiology," published in 1874. In this work the subject was treated in its application to the training of the mind, and to the study of its morbid conditions; the book was not intended to be a *system of psychology*, but simply a supplement to the existing systems of physiology and metaphysics, dealing with subjects which, while occupying a border-land between the two, had been entirely neglected by both. The work has thus a physiological, a psychological, and a social aspect, and is looked upon as an authority ; it was published by Dr. Carpenter in one sense incomplete, for he thought, if not given to the world in its present form, with advance of years he might lose the power of producing it.

In 1879 Dr. Carpenter retired from official life, resigning the registrarship of the University of London, only to devote his leisure to scientific work, and to several philanthropic movements in which he was interested. He shortly, however, took a fresh share in the proceedings of the University, being appointed to the next vacancy in the Senate. He became known as an authority on educational subjects, and aided in the re-organization of St. Paul's School, besides being a member of the Council of the London Society for the Extension of University Teaching and of the Universities' Board. He also promoted the foundation of the Marine Biological Association ; and was secretary and administrator of the Gilchrist Trust, which led him to take up the work of lecturing again, and he was enthusiastically received in several of the manufacturing centres of the country, where his addresses had a very beneficial effect. In 1882 he visited America, and there, too, his lectures and addresses were highly appreciated. Dr. Carpenter's pen did not flag in these later years, and many of his contributions will be found in the periodical press, and in the new edition of the "Encyclopædia Britannica," all characterized by the same clear insight and lucidity of expression for which his early writings are noticeable.

As might have been expected, Dr. Carpenter's love for microscopical research led him to devote much attention to the germ-theory of disease, and it was characteristic of him that, as an old man, he became a warm advocate of it. Two articles from his pen, published in the *Nineteenth Century*, in 1881 and 1884, explain his views on the question. In the first of these he set forth the theory as built up by micro-pathological study, on the basis of Pasteur's researches on fermentation and putrefaction ; in the second he showed the evidence in its favour afforded by the natural history of zymotic diseases. The study of bacterial germs, he said, "is as yet only in its infancy ; but the progress it has already made affords ground for the confident expectation that the Science of Preventive Medicine will ere long furnish us with the means of exterminating all the grievous 'pests' to which flesh is heir." The study since that time has made further progress, and Dr. Carpenter's forecast seems likely, to some extent at any rate, to be justified. It was a source of satisfaction to him that, thirty years before, he had shown that the "predisposing causes" of epidemic disease might be generalized under the expression, *the accumulation of nitrogenous matter in the blood*, which would afford an appropriate *pabulum* in which disease-germs might multiply. Dr. Carpenter also sought to prove, in the light of Darwin's theory, that the tribe of "saprophytes," to which disease-germs belong, have a wide "range of variation" under differences of environment, and that, in their changes, the specific types of zymotic diseases are originated. It seemed to him to be a significant thing that the malignant *Bacillus anthracis* does not differ morphologically "in any important character" from the innocent *Bacillus subtilis*, and, though the latter had not yet been given the potency of the former by "any method of treatment," he thought it "not improbable" that such might yet prove to be the case.

In the year 1885 Dr. Carpenter's health began visibly to decline, but a sojourn in Scotland gave him fresh energy, and he attended the British Association meeting at Aberdeen. His old interest in miracles revived, after reading Dr. Temple's Bampton Lectures, and he consented to deliver an address on the subject on Monday, November the 16th, at the meeting of the "Christian Conference." The subject occupied him greatly, and he discussed it with his friends, but it was fated that he should not deliver the lecture. On Monday evening, November 10th, on retiring to rest, at his house in Regent's Park Road, he took a hot-air bath, to ease the rheumatism with which he was troubled, but, through the accidental overturning of the lamp, he was severely burned, and, after some hours sleep, he died, in the seventy-third year of his age. He was buried at Highgate Cemetery on November 13th, 1885. Dr. Carpenter left a widow, and several sons, some of whom are well known in scientific circles.

It has not been possible in this sketch to indicate the whole life-work of this eminent man, nor to show how great his influence has been on scientific progress in this age. There is scarcely a domain of philosophical enquiry, and scarcely a social movement of importance, in which his many-sided ability and great capacity for work have not at some time enabled him to take a prominent place. It was his part to bring the light of knowledge from his own domain of secluded science to the illumination of common things, and one need but look at his lectures and letters on temperance and vaccination, at his exposure of phrenology, and his treatment of the spiritualistic doctrines, to see how beneficial his influence has been. His discoveries and researches in physical science caused him to be highly esteemed by scientific men; he was a Fellow of the Linnean and Geological Societies, an Honorary Fellow of the Royal Medical and Chirurgical Society, and of the Cambridge Philosophical Society, and a Corresponding Member of the Institute of France, and of the American Philosophical Society. Finally, he was more than once a Vice-President of the Royal Society, and was awarded by the Council the Royal Medal for his physiological researches in 1861, and he received also the Lyell Medal of the Geological Society in 1883.

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THOMAS SPENCER COBBOLD,

M.D., F.R.S., F.L.S.

THE subject of this memoir, who belonged to a well-known Suffolk family, was born at Ipswich in 1828. He was the son of the Rev. Richard Cobbold, rector of Wortham, Suffolk, who wrote that remarkable book, "The History of Margaret Catchpole." His grandmother, too, Mrs. Elizabeth Cobbold, of Holy Wells, Ipswich, was an energetic collector of geological specimens, so that his love for science and literature were inherited. Young Cobbold was educated for a time by the Rev. H. Burrows, of Yarmouth, and he afterwards went to the Charterhouse. His study of medicine began at the Norfolk and Norwich Hospital in 1844, where, under the auspices of that brilliant surgeon and operator, the late John Green Crosse, F.R.S., he enjoyed abundant opportunities of learning the details of ordinary bedside work, and where, during his three years of clinical study, he was frequently entrusted with the performance of minor surgical operations. As Mr. Crosse possessed not only a choice pathological collection, but also a licensed dissecting room of his own, a sound basis of anatomical and physiological study was secured for his pupil. Moreover, at Norwich, Mr. Cobbold's attention was soon drawn to biological research. His teacher and adviser, Mr. Crosse, recommended his pupil to proceed thence to the Northern University. Accordingly, provided with an introduction to Professor Syme, Mr. Cobbold went to Edinburgh, where he was not only received most kindly by that celebrated surgeon, but afterwards was frequently welcomed within the family circle at Millbank. In the second year of study Mr. Cobbold became class-assistant to Professor Hughes Bennett, in connection with the chair of the Institute of Medicine. Still more advantageous was his appointment to the office of prosector to Professor Goodsir, whose fame as a physical anatomist was then at its zenith. In this way it was Mr. Cobbold's fortunate lot to be placed in intimate contact with one of the most profound and far-reaching intellects that ever adorned the Edinburgh University; and, thus admitted into Goodsir's confidence and friendship, it would have been surprising if he had failed to imbibe something of the amazing breadth and scope of the great anatomist's teaching. His work of preparing dissections for Goodsir's four o'clock lecture was, we may suppose, no light task.

Mr. Cobbold graduated in 1851, on the same day as his then intimate fellow students, Dr. Burdon Sanderson and Dr. Charles Murchison, each of the three

Yours faithfully
T. Spencer Cobbold

receiving a graduation gold medal, which at that time formed the highest honour the University could confer upon its junior alumni. Immediately afterwards Dr. Cobbold proceeded to Paris; and, on returning to Edinburgh, was appointed Curator of the Anatomical Museum, where he often lectured on Comparative Osteology. He was also at the same period elected Senior President of the Royal Medical Society, Dr. Dobie, of Chester, being Junior President in the same year. Then a new and definite sphere of activity commenced with Dr. Cobbold. Types of all classes of animals were received at the University Museum; and, of these, many were dissected and mounted for display, while others formed materials for private research. Professor Bennett having started the Physiological Society, Dr. W. T. Gairdner and Dr. Cobbold were elected Vice-Presidents. To that society Dr. Cobbold contributed an abstract of his prize thesis on the "Canal of Petit," besides numerous memoirs on the anatomy of the giraffe and other animals, which, together, formed the basis of his article "Ruminantia," published in Dr. Todd's "Cyclopædia of Anatomy and Physiology." These labours continued without interruption until a new attraction presented itself in the arrival of Edward Forbes, who was elected to the chair of Natural History, vacated by the death of Robert Jamieson. It is not surprising that Dr. Cobbold, and many of his equally young and ardent companions, were fascinated by the teaching of Forbes, alike in the class room and in the field. The magnetic influence of that teacher over the young naturalists of that day was chiefly due to his geological demonstrations, and in these Cobbold took an especial interest, working hammer in hand, and collecting large numbers of fossils and ordinary rock specimens. This collection he afterwards greatly extended by excursions to Arran, to the Yorkshire and Devonshire coasts, to the Isle of Wight, and elsewhere, and thus was well supplied with the materials necessary for the illustration of the Swiney Lectures, which, later in life, he delivered. After the death of Forbes, Dr. Cobbold resigned his appointments in Edinburgh, and repaired to London, in 1856, where he was at once appointed to the then vacant chair of Botany at St. Mary's Hospital. After two years, he became attached to the Middlesex Hospital Medical School in a similar capacity, and there, for a period of thirteen years, he also lectured on Zoology and Comparative Anatomy.

It was during his connection with the Middlesex School that he instituted those experiments in Helminthology which brought his name so prominently before the scientific world, and there also that he lectured for some time on parasitic diseases. The results he obtained were deemed so important that, at the instance of Sir John Lubbock, the Council of the British Association advanced a small sum of money for the further prosecution and extension of these labours. At the same time, during three successive years, Dr. Cobbold obtained permission to examine the bodies of animals dying at the Zoological Gardens, the results being communicated to the Zoological Society. It was there that he made the curious discovery of *Bilharzia hæmatobia*, as a parasite infesting a species of African monkey. Many other helminthological investigations were also brought forward as contributions to the Proceedings and "Transactions" of the Linnean Society, and his paper on the artificial production of Cestode Tuberculosis in the calf was read before the Royal Society. Dr. Cobbold was elected a Fellow of that learned body on the 2nd of June, 1864, and, in the following autumn, he published his well-known "Entozoa: an Introduction to the Study of Helminthology," superbly illustrated, and one of the most luxurious volumes ever issued from the English press. At that period no English work on animal parasites was in existence, unless we include the Sydenham Society's edition of Küchenmeister. The cordiality with which Dr. Cobbold's volume was received was such that reviews of it appeared in twenty separate periodicals, all of them, without exception, being more or less of a laudatory character. The *Lancet* observed that the work "formed a noble contribution to medical science and a credit to our national literature." The *Edinburgh Medical Journal* remarked that it was "the first original work in the English language professing to contain a complete account of the Human Entozoa." The *Medical Times* conjectured that it would "leave its mark in this branch of medical knowledge for many years to come;" whilst *Cosmos* said:—"Ce livre constitue un des traités les plus approfondis et les plus complets que nous ayons sur cette branche de l'histoire naturelle." The *Quarterly Journal of Science*, the *British and Foreign Medico-Chirurgical Review*, the *Athenæum*, the *Quarterly Journal of Microscopical Science*, and the *Popular Science Review*, all supported the author in the kindest and most complimentary terms. One periodical went so far as to say that Dr. Cobbold was "contributing to the accomplishment of a task which promises a boon to the human race scarcely second to that conferred by Jenner."

In taking up the subject of Helminthology, Dr. Cobbold entered upon a department of science which, so far as England is concerned, he made entirely his own, The entozoa, amongst the lower animals, like the cephalopoda, amongst the higher, had been almost entirely neglected by English naturalists, though Leuckart, Küchenmeister, and Von Siebold were great authorities on helminthological subjects abroad. For this unusual study Dr. Cobbold conceived an enthusiastic liking, and he pursued it with a single-minded purpose and practical application that resulted in very valuable scientific discoveries; and it was not long before he became the chief British authority on the question.

In the year 1865 he published a *brochure*, expressing a fear that sewage irrigation might lead to a wide spread of entozootic disease, by placing the eggs of *Bilharzia*, a parasite which infests the blood vessels of the natives of many parts of Africa, and is also found at times in England, as well as of other parasites, in conditions which would be permanently favourable for their development. Thus attention was drawn to a most important point, but it is just to say that, after the fullest consideration, competent authorities have not found Dr. Cobbold's fears to be justified.

Up to the year 1865 Dr. Cobbold steadily refused to see patients, to prescribe, or to accept fees, in any form whatever. After labouring unremittingly for twenty years in Natural History, he hoped to obtain some official appointment connected with the science of Biology. A number of attractive posts were offered to him later, two of these, and eventually a third, coming directly through the influence of the late Sir Roderick Impey Murchison. At length Dr. Cobbold, who was not entirely independent of his profession, commenced practice in Wimpole Street, whence, after a brief interval, he removed to Harley Street. In this excellent professional locality he practised for ten years, but, during that period, he never relinquished his favourite scientific pursuits. He continued to write papers for the societies, and was appointed, in 1868, Emeritus Swiney Professor of Geology in connection with the British Museum, a post open only to Edinburgh graduates in medicine, which he held for five years. At the same time he was engaged in lecturing on Botany, and delivered a special course of lectures concerning the Parasites of Animals employed as Food, at the Society of Arts. Similarly, he delivered numerous public lectures in the large towns of England, such as Birmingham, Manchester, Hull, Norwich, Bath, Nottingham, and Stamford. One course of the Swiney Lectures was delivered at Edinburgh. A series of lectures which Dr. Cobbold had delivered on "Practical Helminthology," was published in 1872 in a very practical volume, which had a high value as the recorded experience of an able scientific observer, and of one of the foremost helminthologists of the age, in the diagnosis and treatment of internal parasitic disease. In 1872 Dr. Cobbold accepted the Professorship of Botany at the Royal Veterinary College, and, shortly afterwards, a Chair of Helminthology was also instituted for him there. This was established for the purpose of conveying instruction to veterinary students on the parasites and parasitic diseases of the domesticated animals. It opened up fresh and abundant opportunities of research, in connection more especially with comparative pathology. His teaching at the College was highly beneficial and attractive, as was acknowledged by all who heard him. Professor Robertson, the Principal, speaks thus: "To him belongs the credit of having introduced the study of Helminthology into the curriculum of the College. To his teaching in this department of science the veterinary profession, both in this country and throughout our colonies, is largely indebted." Thus, year by year, Dr. Cobbold laboured in this most interesting department of medical science; and, as a result, he contributed papers to different journals and societies, the memoirs collectively amounting to several scores. We may add that these efforts did not involve any diminution of his work among the human entozoa. They tended, indeed, rather to increase his knowledge of such helminthology, as may be seen in the fact that he contributed fifty brief articles on Human Parasites to Dr. Quain's "Dictionary of Medicine." Although Dr. Cobbold retired from active practice, he did not refuse to see any patient recommended to consult him by his professional brethren.

Connected with his own specialty, Dr. Cobbold published some other useful books, one of which, that on "Tapeworms," passed through several editions. His Lectures on Practical Helminthology, alluded to above, have long been out of print. Besides these he published a manual of the "Internal Parasites of our Domesticated Animals," as well as a larger work entitled "Parasites: a Treatise on the Entozoa of Man and Animals, including some Account of the Ectozoa."

The admirable spirit in which Dr. Cobbold undertook his work, and the high purposes he had in view, may be understood by reading the concluding paragraph of the preface of this *magnum opus* :—

"The structure and economy of a humble parasite," he says, "brings to the investigator no slight insight into the workings of nature. If these workings cannot at all times be pronounced to be 'good and beautiful,' they must at least be characterized as 'true.' The knowledge of the true—especially if that knowledge by its practical applications be calculated to confer substantial benefits upon man and his inferior fellow-creatures—ought to be held in high esteem ; but, apart from this purely utilitarian view, there remains for the investigator the delight occasioned by the inrush of new scientific ideas. The average mind, being either essentially commercial or ridiculously sentimental, as the case may be, is totally incapable of comprehending the motive power that animates and guides the votary of science. The late Professor Faraday, a man wholly untinged by the ambitions of wealth and power, once remarked to me that there were no people so difficult to instruct as those who were ignorant of their own ignorance. It is just these very persons who, when placed in high positions of social, political, or professional trust, most powerfully contribute to check a nation's progress. There are too few genuine workers at science in this country. As one of the rank and file I claim only to have honestly contributed my mite. I should like to see a small army of helminthologists rise up and lay siege to the fortresses at present securely held by thousands of death-dealing parasites." The *Lancet* said of this work: "Its appearance constitutes a notable event in the history alike of medicine and natural history, and is a noble monument to the devotion and enthusiasm of its author."

Mention must also be made of a few of Dr. Cobbold's special essays and contributions which deal with questions that he adopted more or less as his own. Amongst these are various papers on the "Filariæ," emphasizing and making more generally known the labours and discoveries of Manson and Lewis on the same subjects. A Lecture on the "Hæmatozoa," delivered at the Middlesex Hospital, was attended by a large number of medical men, including Sir Joseph Fayrer and other physicians interested in the etiology of tropical diseases. At the opening of the London Medical Society's new rooms in Chandos Street, the Prince of Wales personally inspected the specimens of parasites shown by Dr. Cobbold, and expressed his gratification at having had the opportunity of seeing those that are now generally admitted to cause certain forms of grouse disease, the epidemics of ostriches and pigeons, and the gapes in chickens and in various kinds of game-birds. In relation to the diseases of the higher animals, Dr. Cobbold paid special attention to the parasites of elephants, horses, cattle, sheep, and dogs. From these and other animals he obtained, and was the first to describe, many new species of entozoa. A series of papers by him showed that scores of Welsh ponies had perished during one season from *strongylus tetracanthus*, and others from *tænia perfoliata*. One memoir explained the fatal *epizoötic* amongst pigeons produced by *ascaris maculata ;* whilst another showed that the destruction of young ostriches in Africa was due to the parasite which he named *strongylus Douglassii*—an entozoon, by the way, which closely resembles the *strongylus pergracilis*, also discovered by him in the grouse. One of the most complete of all Dr. Cobbold's latest essays was that which formed a separate part of the Linnean Society's "Transactions." It was entitled "The Parasites of Elephants." In this fully-illustrated memoir, upon which Dr. Cobbold was engaged for several months, he described a number of new species, and supplemented what may be called the strictly scientific portion of the memoir with a series of "Practical Considerations," designed to help all persons concerned in the selection, rearing, and general management of these valuable animals ; moreover, as with most of his writings, the essay concluded with a bibliography which may be pronounced exhaustive and complete. Another work which the distinguished helminthologist executed was the revision of Maunder's "Treasury of Natural History." Dr. Cobbold's health began to fail in the year 1885, and it was a source of great regret to him that he was unable to arrange his vast collection of materials for publication. After speaking at the soirée held at the Middlesex Hospital, in the summer of that year, he had a syncopal attack ; and, during the severe winter, his strength gave way. Shortly before his death he was engaged on a paper on two species of Strongylus, which was read before the Linnean Society on March 4th, 1886. He died on March 20th, aged 57.

The place of Dr. Cobbold will not easily be filled, for those are few who will be willing to give themselves up with his devotion to the specialty of helminthology, in which his qualities and tastes enabled him to be of great service and to make many valuable discoveries. He was frequently applied to by his professional brethren to pronounce upon peculiar cases, and his advice was of unquestioned value. He depended greatly on the careful method and timing of the dosage of anthelmintics, and thought it of the greatest importance to procure good and trustworthy drugs as vermifuges. Dr. Cobbold was very successful as a lecturer. Taking the entire five courses of Swiney Lectures on Geology together, it was found that the total attendances numbered upwards of fifteen thousand. Three of the courses, of twelve lectures each, were delivered at the Royal School of Mines, and, towards the close of the last course, many of the visitors could not be accommodated with seats, so great was the crowd. As regards the lectureship in question, this success was unprecedented and unique. Dr. Cobbold was clear, and had a certain dogmatism as a teacher, which sprang from firm conviction ; and he maintained his opinions with great vigour in argument.

Dr. Cobbold will perhaps be chiefly esteemed as a biologist and a man of science. He was warmly received in many learned circles, and was connected with a number of the societies. For some time he was Vice-President of the Edinburgh University Club, and President of the Quekett Microscopical Society, besides being Honorary Vice-President of the Birmingham Natural History and Microscopical Society, honorary corresponding member of the Academy of Sciences of Philadelphia, and a foreign corresponding member of the Royal Agricultural Academy of Turin. His love of nature was deep and abiding, and he delighted to woo its varying moods, and to catch the many aspects it assumes ; he looked, too, through his last winter, for the coming spring and summer whose perfections he should not see here. In private life Dr. Cobbold was known to be of a kind and affectionate disposition, and he had many friends. His love of music was very great, and he often sang in his remarkable voice —a pure alto—at the entertainments of the Edinburgh University Club in London. He was indeed a man of great and special powers and attainments, and will not soon be forgotten. Dr. Cobbold married, in 1852, the daughter of the late Mr. John Amys, of Rickinghall, Suffolk, and leaves her a widow with several children, his eldest son being Dr. Charles Spencer Waller Cobbold, Medical Superintendent of Earlswood Asylum.

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Yours very faithfully
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THE subject of this memoir was born in December, 1843, at Shrewsbury, where his early years, together with those of his brother and sister, were tended entirely by his mother, his father having died when he was very young. He was educated at the Cheltenham Grammar School, where he was very successful in his studies, and obtained a Demyship in Natural Science at Magdalen College, Oxford, in March, 1861, at the early age of seventeen. In the subsequent October he matriculated, and in 1863 took a first class in Mathematics at Moderations. In the same year he had the honour of being selected by Professor Daubeny, the eminent Chemist, Botanist, and Vulcanologist, to accompany him in his examination of the volcanic appearances in the Montbrison district of Auvergne. In 1864 he passed in the final Classical Schools, and took a first class in Mathematics for the degree of Bachelor of Arts. Early in the following year Mr. Corfield obtained, in open competition, the Medical Fellowship at Pembroke College, and thus the line of his future career was decided. He next gained first-class honours in the Natural Science Schools, taking Chemistry and Geology as special subjects. Other successes followed rapidly, and the Burdett Coutts University Scholarship in Geology and the Allied Sciences fell to him in 1866, to which, a year later, was added the Radcliffe Travelling Fellowship in Medicine. This gave him an opportunity of visiting the professional centres of the Continent, and, amongst other places, Paris, where he studied analysis, with special reference to hygienic matters, under Berthélot, at the Collège de France, and took the opportunity then afforded of clinical study under Béhier, Sée, Hardy, and other eminent teachers, besides attending Bouchardat's lectures on Hygiene. He next proceeded to Lyons, where he worked at clinical medicine and surgery, and also made a special study of the remains of the remarkable aqueducts of ancient Lugdunum, and then passed over into Algiers, visiting afterwards some of the medical schools in Italy and Sicily.

In 1868 he took his M.B. degree, and was appointed Examiner for Honours in Natural Science at the University of Oxford; and, in 1869, he received the further appointment of Professor of Hygiene and Public Health at University College, London. His Introductory Lecture was printed in the *British Medical Journal* of June 18th and 25th, 1870, and was afterwards published in pamphlet form, under the title of a "Résumé of the History of Hygiene." He still directs the Hygienic Laboratory, which he started at this College, and in which many pupils, who have subsequently gained important sanitary posts, have been trained.

He became a Member of the Royal College of Physicians of London in 1869, and, in the same year, was elected a Member of the Committee appointed by the British Association for the Advancement of Science, to report on the Treatment and Utilization of Sewage. For six years he performed the laborious duties of Reporter to the Committee, and was actively engaged in its important work, which has had a great influence on the subsequent advancement of sanitary science. The chief results of these labours of the committee may be briefly summarized as follows :

1. The proof obtained that earth which has been used even six times in an earth-closet has its manurial ingredients increased only to a very slight extent, and is, in fact, not richer than good garden soil, so that "such a manure, even if disposed of free of charge, would bear carriage to a very short distance only."

2. The results obtained from quantitative experiments, lasting over five years, to determine what per-centage of the nitrogen applied in sewage was recovered in the crops on a sewage farm. These experiments showed that nearly 33 per cent. of the nitrogen applied to the farm in the sewage was recovered in the crops.

3. The demonstration of the fact that on irrigation farms, where surface action is relied on, satisfactory purification of the sewage does not take place in the winter, but that on farms where the sewage passes *through* the soil, the purification effected in the winter, when plant growth is least, is as effectual as in the summer, when it is greatest.

At the request of the members of this important Committee, Professor Corfield prepared "A Digest of Facts relating to the Treatment and Utilization of Sewage," which was published in 1870, and has gone through two subsequent editions. This work embodied a vast amount of original research, and was in no sense a report of the Committee. The first general principle arrived at by its author is that "the method which does, in fact, where it is anything like efficiently carried out, remove at once and completely from the vicinity of habitations the various sorts of refuse in the most expeditious manner, is the one which must be the most conducive to health." The dry methods he finds are all wrong in principle, because in them the excremental matters are left in and about the house instead of being at once removed ; and, as Dr. Rolleston and Dr. Parkes have pointed out, the compost is not necessarily disinfected even when it is deodorized. The points which Professor Corfield considers in relation to the disposal of sewage are—the purification of it so that the effluent water may be safely allowed to flow into a watercourse ; the application of it as an agricultural manure so as to realize the greatest return per ton of the sewage per acre of land ; and the carrying out of these so that the health of the inhabitants shall in no way be injuriously affected by the process. The first of these conditions, he says, is satisfied by irrigation; but he lays great stress upon the fact that the sewage must not run merely over the land, but *through* it, so as to come into contact with the roots of the plants, and that it may be further purified by the action of the soil itself. That irrigation is the most economical way of disposing of the sewage he shows by a large number of returns as to the value of crops raised on sewage farms in various parts of the country. By sewage-irrigation perfectly worthless land, blowing sea-sand for instance, may be made to support large crops, and the quantity of crops obtained from the best land is enormously increased, while the use of other manures is in great part unnecessary, and the farmer is rendered entirely independent of drought. Far from thinking sewage farms a danger, Professor Corfield believes that the results of irrigation farming, properly carried out, may be a positive advantage to the public health, from the luxuriant healthy vegetation supported on the farms, and the giving off of ozone consequent thereon. There is, he says, no proof whatever that entozoic disease has ever been spread by the use of sewage-grown vegetables.

The alarming illness of the Prince of Wales at Londesborough Lodge, Scarborough, where he was attacked by typhoid fever at the close of the year 1871, called attention very prominently to the subject of house sanitation, and Professor Corfield made, at Lord Londesborough's request, a careful inspection of the condition of the Lodge, and described the results in a letter, which appeared in the *Times* on January 22nd, 1872.

In 1871 he was elected Medical Officer of Health for Islington, and, in 1872, obtained, and still holds, the same post for St. George's, Hanover Square. He took his M.D. degree at Oxford in 1872, and was next year appointed Lecturer on the Laws of Health at the Birmingham and Midland Institute, an office which he held for five years; afterwards he accepted a similar post at the Saltley Training College. In 1873 he delivered a course of lectures on "Water Supply, Sewerage, and Sewage Utilization" to the Royal Engineers stationed at Chatham; these lectures were at once reprinted in the United States.

Dr. Corfield, in 1874, read a paper before the Epidemiological Society "On the supposed Spontaneous Origin of the Poison of Enteric Fever," in which he vigorously combated the possibility of the *de novo* origin of the disease. The following passages will explain his views on this important question:—

"Are we, then, able to trace every case of enteric fever to a previous case? Certainly not; and it would be very wonderful if we could! When we consider that a person suffering from this disease may go about for weeks, leaving the poison in several different places every day; that he may go about his work until so prostrate that he goes to bed to die; that he may fall down dead from perforation of the intestines without the disease having been recognised; that the poison which he has left in so many different places may be distributed broadcast in water, milk, sewer-air, or some other vehicle—when we consider all these things, we may well wonder, not that we are often unable to trace the disease to infection from a previous case, but that we are so often able to do so. From the fact that we are able so frequently to point out the source whence the contagion has been derived, and to trace it to a previous case, we have at any rate a strong presumption in favour of the view that, when isolated cases occur, and when there appears to be no connection with previous ones, the fact is that we are unable to trace any such connection, and it is clear from the nature of the disease that this must frequently be the case; and, moreover, we have no right to assume that we even yet know all the methods by which the poison of this disease may be conveyed. . . . . . I must confess that these considerations prevent my accepting any of the cases on record as cases where non-importation has been proved, and I cannot therefore accept the dictum that the disease 'may be generated independently of a previous case by fermentation of fæcal, and, perhaps, other forms of organic matter.' Were this true, would not the disease be much more prevalent? How is it that a house or town may be in a condition eminently suited for the existence of this fever, as shown by the fact that when a case is imported the disease spreads, and often becomes a severe epidemic, and yet no case is heard of there for many years, until the importation takes place?"

Professor Corfield's fixed conclusions are summed up in the following paragraph:—

"I therefore maintain that foul air contaminated by decomposing animal matters is capable of producing mere diarrhœa, and that, when it produces enteric fever, it contains the poison of that disease, and that the arguments adduced to prove that this poison can be generated from such decomposing matters, independently of a previous case of the disease, are inadequate to do so; that, in many of the cases where non-importation is supposed to have been all but proved, it has not been even rendered a fair presumption, and therefore that, in the present state of our knowledge, we are not justified in saying that the disease ever arises *de novo*."

In 1875 Professor Corfield was elected a Fellow of the Royal College of Physicians; and he has published some "Remarks on the Study and Practice of Public Medicine," which were delivered as an Introductory Lecture to the Students of University College in that year. One of his most interesting *brochures* is a pamphlet on "Sanitary Fallacies," which is the substance of an address delivered at Croydon in 1879, to the Sanitary Congress, wherein he sketches the history of the Progress of Medicine, and dwells specially upon the current fallacies of the day, naming the untenable arguments adduced in favour of the spontaneous origin of zymotic disease, the misunderstanding of the water-carriage system for the removal of sewage, and the popular errors in regard to dietetics and vaccination.

In 1879 he delivered a course of Cantor Lectures before the Society of Arts, taking for his subject, "Dwelling Houses, their Sanitary Construction and Arrangements." He illustrated the lectures at the time by specimens from the Parkes Museum, and the published editions contain many woodcuts from them. In these excellent lectures, Dr. Corfield deals with everything connected with his theme. The site in relation to soil, ground water, made ground, and the surroundings; the materials, ventilation, lighting, warming, water supply, and drainage, are all ably and lucidly dealt with. He concludes with these words, which, indeed, might be taken as the text of his discourse: "The principles that guide us in carrying out sanitary works are simple enough; but sufficient has been said in these chapters to convince every one that it is only by the minutest attention to details that we can hope to guard ourselves against the dangers that surround us, especially in the contrivances for the removal of refuse matters."

A very useful course of lectures, which Professor Corfield delivered at the rooms of the Society of Arts, under the auspices of the Trades' Guild of Learning and of the National Health Society, was published in an octavo volume by Messrs. Kegan Paul, and Co., in 1880. The lectures were of that popular kind suggested by Canon Kingsley in his "Essay on Science and Health," where he claimed that people should be taught "something of how their bodies are made, and how they work." It would be impossible to imagine anything more terse and clear for the understanding of unprofessional people than Professor Corfield's exposition, in these reprinted lectures, of the anatomy of the organs, the circulation and respiration, the process of nutrition, and the other functions of the body, with the conditions of health and disease. It may here be observed that lucidity and directness are characteristic of Dr. Corfield's professional writings, and have contributed largely to their popularity.

We come now to certain other of his publications, which belong to the domain of sanitary science and of preventive medicine, in which he has done much useful work. At the International Congress of Hygiene, held at the Hague in 1884, in an address on "La Science Ennemie de la Maladie," he made an eloquent claim for the antiquity and magnificent results of this science, declaring that the regulations of the Egyptians for checking the development of contagious disease, as known to us through the writings of Moses, were incontestably so excellent that, with the sole exception of the use of powerful chemical disinfectants, which were unknown to them, the most advanced professors of hygiene in these days can devise nothing better or more complete. The great aqueducts of the Romans excited his admiration, for in the time of Frontinus, as he said, it is calculated that the water brought to

Rome was ten times greater in quantity than that supplied to the inhabitants of London in these days, and, even now, when but a few of these magnificent works are in existence, the Eternal City is better provided with water than any town in Europe. "The Water Supply of Ancient Roman Cities" is a subject that Professor Corfield has treated recently before the Sanitary Institute. Proceeding with his address at the Hague, he asked what, in these days of revived sanitary knowledge, has become of scorbutic disease, which used to decimate our armies and our marine service, and pointed out the control we have acquired over the ravages of small-pox, the reduced mortality from typhoid, and the virtual extinction of typhus, as evidences of the importance of sanitary science and preventive medicine, and of the great services they have rendered to the public. "Tels donc," he concluded, "ont été les résultats de l'application de la Science à l'extirpation de la maladie et à la prolongation de la vie. Que pouvons nous faire de plus ? En cherchant diligemment les causes de la maladie, et en adoptant tous les moyens qui nous sont possibles pour combattre ces causes, en se reposant sur le vrai savoir et non pas sur les règlements empiriques, en suivant les préceptes d'Hippocrate, en étant rationaliste en hygiène et non pas empirique ; plus nous saurons, mieux nous pourrons lutter avec la maladie et la mort, et plus nous compendrons la grande vérité que la Science est ennemie de la Maladie."

In a lecture at the Parkes Museum, in 1883, on "Common Defects in the Sanitary Arrangements of Houses," Professor Corfield, whose large experience of house sanitation entitles his opinions to great respect, detailed the right way of examining a house to test its condition. The best plan, he said, was to begin with the roof, and the water that flowed from it, the pipes to take that water away, and the gutters, which might become a source of disease from the putrescent matter that collected in them, if the foul air were not excluded from the house, as might the pipes also from their connection with the drains. The next things that should occupy attention were the cisterns and the sinks, particularly in respect of their connection with the drains ; and the closets were a very important matter. The drains themselves should be examined last of all, and with the utmost care. It may here be mentioned that Professor Corfield now devotes himself exclusively to Sanitary Practice, advising as to the causes of outbreaks of disease connected with sanitary defects, and the remedying of such defects. In recognition of his devotion to this subject, the Royal Institute of British Architects recently elected him an Honorary Associate.

At the International Health Exhibition of 1884, he was Director of the Hygienic Laboratory, and he made some very important contributions to the official literature of the exhibition. One of the most valuable of these was a lecture on "Foul Air in Houses," delivered on July 4th. The first impurities noticed were those proceeding from the respiration of human beings ; the most deleterious quality of the air in improperly ventilated places is not, he said, the increase of carbonic acid, but the foul putrescible organic matter with which the air is filled—a fruitful source of disease. He next proceeded to notice the foul air that results from defective and ill-constructed sewers and drains, as well as from dust-bins and soil-pipes, with such a wealth of practical knowledge of the all-important details of sanitary construction that the little printed *brochure* must have been of the utmost use to builders and others concerned with domestic sanitation. He was also a member of the Committee that superintended the construction of the "Healthy and Unhealthy Houses" which attracted so much attention at that Exhibition.

Professor Corfield's most recent publications are: the third edition of his work on "The Treatment and Utilization of Sewage," in the preparation of which he has been assisted by his former pupil, Dr. Louis Parkes; his Anniversary Address to the Sanitary Institute on "The Water Supply of Ancient Roman Cities, with especial reference to Lugdunum (Lyons)," in which he shows that the Romans employed inverted siphons made of lead for the purpose of carrying their aqueducts across deep valleys, and which is illustrated by lithographs from sketches made by himself on the spot; and his paper on "Outbreaks of Sore Throat caused by slight escapes of Coal Gas," read before the Society of Medical Officers of Health.

As Professor of Hygiene and Public Health at University College, London, and for some years one of the Examiners for the Sanitary Science Certificate at the University of Cambridge, and at the Royal College of Physicians, as a Fellow of the Institute of Chemistry and of the Chemical Society, a Fellow of the Geological Society, an Honorary Associate of the Société Française d'Hygiène, and, more recently, an Honorary Corresponding Member of the Royal Society of Public Health of Belgium, a Past President of the Society of Medical Officers of Health, and Chairman of the Council of the Sanitary Institute of Great Britain, Professor Corfield is prominently before the Profession. He is also a public man in the ordinary sense of the word, inasmuch as the branch of Medicine which he practises is one in which the public take much interest, and which forms a more frequent meeting ground between them and the Profession than any other. Moreover, as Chairman of Committee of the Sunday Society, whose object is the opening of Museums, Picture Galleries, and Public Libraries on Sundays, and as a Member of the Council of the National Dwellings Society, he comes prominently forward in the domain of Social Science; while his literary talents have been by no means too exclusively devoted to professional purposes, as is witnessed by his papers on "Mountain Climbing," on "Etna in Winter," on "The Volcanoes of Auvergne," and on "Pile Dwellings in the Swiss Lakes."

But no one can be incessantly at work, and most men who work hard have "hobbies" for their leisure time. Dr. Corfield's hobbies are Geology, Fishing, and also, as is the case with many medical men, Art. With regard to the first, he has amassed an extensive collection of geological specimens; and has discovered the presence of *Lithodomi* in the Silurian strata, and thus "removed to an earlier age than had previously been known the existence of boring bivalves" (La Touche on the Geology of Shropshire). For the second, he has been an ardent angler all his life, and has a choice library of books on Angling, including that excessive rarity, the first edition of Izaak Walton's "Compleat Angler". For the third, he is well known as a Bewick collector; his collection of original drawings, rare prints, "states" of engravings, portraits, and personal relics of the great English wood-engraver, is indeed almost without a rival, and has been brought together as a labour of love.

Professor Corfield married, in 1876, Emily Madelina, youngest daughter of the late John Pike, Esq., F.S.A., and has six children.

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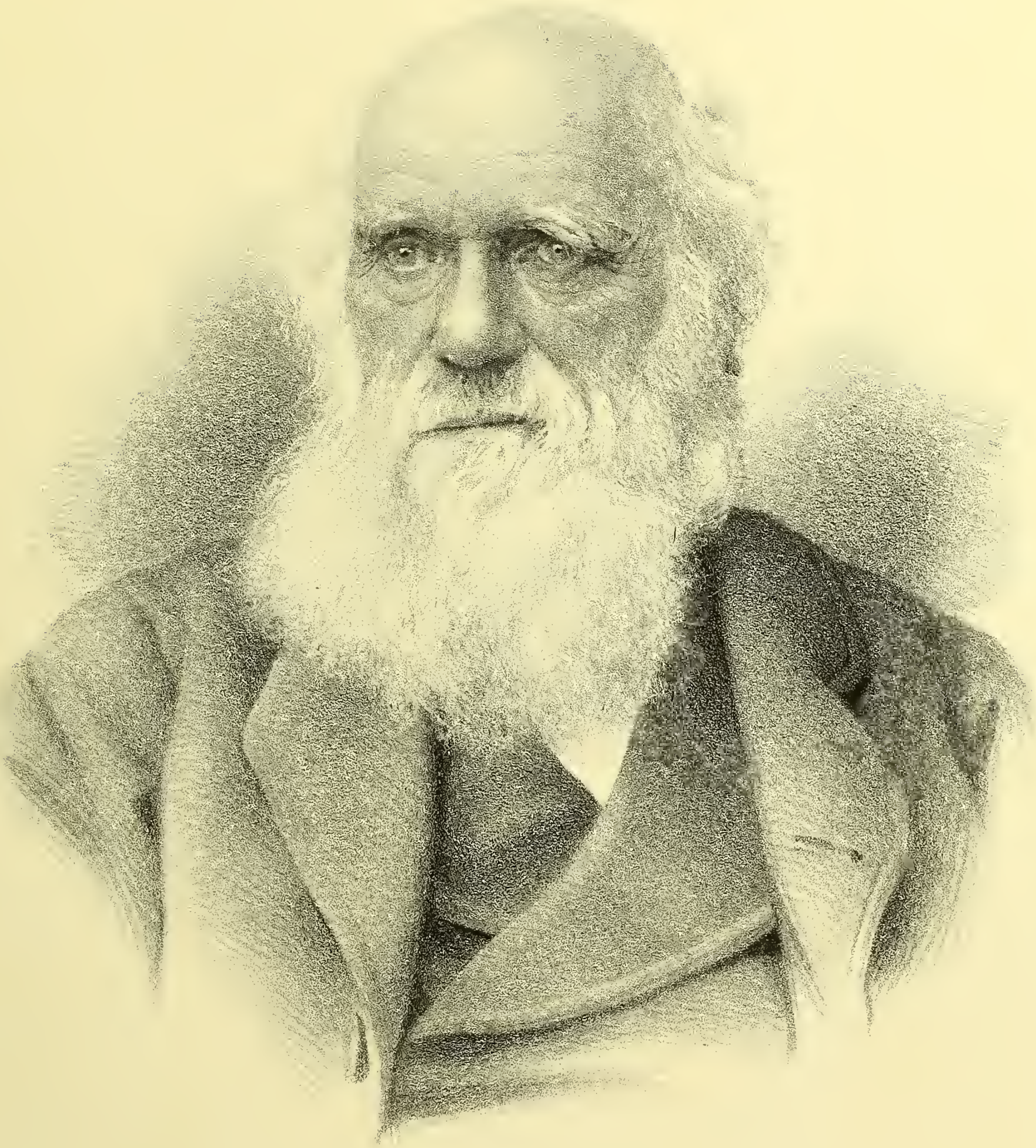
CHARLES DARWIN,

LL.D., F.R.S., F.L.S., F.Z.S., F.G.S.

A LIFE of Charles Darwin appears in this collection of biographies of medical men, not because of the great theories with which his name is associated, nor because of his high place amongst modern biologists, but because of the germinal power and vivifying effect of his labours throughout the whole domain of science. Sir William Gull, in his Inaugural Address to the Medical Section of the International Medical Congress in 1881, rightly instanced the Museum of Hunter and the works of Darwin as splendid examples, the one of *records*, and the other of *inferences*. "There is," he said, "an indissoluble union between all sciences. . . . . . Besides, almost every germ of scientific thought has sprung in some way from medicine." The close connection of the sciences, and their mutual inter-relations, are, indeed, well known ; and it would not be difficult to show how the labours of the great biologist are reflected in the theory of modern medicine. The services which he rendered to it have been recognized both at home and abroad, and he was made an Honorary M.D. of Leyden and of Bonn.

Charles Darwin (he rarely used his second name of Robert) was the grandson of Erasmus Darwin, a physician of the last century, and an eminent man of science in his day. Erasmus Darwin derived a taste for science from his father, and, after taking his medical degree at Cambridge, and going through the medical course at Edinburgh, he settled at Nottingham, whence he shortly removed to Lichfield, and devoted himself to writing poetry, and to making speculations in the realm of natural philosophy. We cannot rightly grasp the position of Charles Darwin unless we first understand the work of his grandfather, for Erasmus Darwin occupies a chief place in the growth of the evolution theory. The eighteenth century was a time when the biological sciences were in a chaotic condition, but it gave birth to the idea of the variability and development of species. The movement began with Buffon, who scarcely dared to suggest it, and with Geoffroy St. Hilaire ; Goethe, too, brooded upon it ; but Erasmus Darwin boldly gave it shape in his "Zoonomia," dealing with the laws of life on the lines of Buffon's theory of development, to which he added the dictum that "environment" was the cause of all variation. This is an important point in considering the work of the subject of this memoir. Erasmus Darwin's book was read in certain circles, but its chief influence was upon Lamarck, who gave new form



Yours sincerely
Charles Darwin

and substance to the theory, boldly declaring that all living things had been developed, partly through hybridism, and partly through the agency of the physical conditions of life, from one or more primordial germs.

Erasmus Darwin had three sons, each of whom attained a respectable place in the scientific world, Sir Francis Darwin as a Zoologist, and Charles Darwin and Robert Waring Darwin, F.R.S., in the department of medicine. The latter, who was a physician of Shrewsbury, had, as his more eminent son was wont to relate, a remarkable insight into the mental conditions of his patients, and an unusual power, with few indications, of diagnosing the various forms of disease. It is recorded of him that, having established a free dispensary for the poor, he was accustomed to make a trifling charge for the bottles, in order that the honourable pride of the recipients of his favour should not be wounded.

Charles Robert Darwin, the subject of this memoir, was the second son of this Robert Waring Darwin, F.R.S., the Shrewsbury physician, and his mother was a daughter of Josiah Wedgwood, F.R.S., the world-famed pottery manufacturer. He was born at Shrewsbury on February 12, 1809, and was educated first at Shrewsbury Grammar School, under Dr. Butler; afterwards he studied for the Medical Profession at Edinburgh University for two years, where he betrayed his great love for natural history, and read one or two papers before the Plinian Society of the University. But his intention of following his father's profession was abandoned, and he settled down at Christ's College, Cambridge, where he took the degree of B.A. in 1831, proceeding to the M.A. in 1837. At Cambridge he made many friends, including Henslow, Sedgwick, Airy, Ramsay, and others; and, in their congenial society, his predilection for the natural sciences grew. At the same time he is said to have been a keen fox-hunter, and a lover of field sports.

Immediately after taking his first degree, a memorable event occurred—his voyage in the "Beagle." It was in the year 1831, and Captain Fitzroy, who had offered part of his cabin to any naturalist who would accompany the ship on her surveying voyage round the world, was very glad to have Charles Darwin as his companion. The young naturalist suffered terribly from sea sickness, but still he collected, arranged, and thought, patiently and carefully. The voyage was undoubtedly of the greatest use to him. The "Beagle" left England on December 27th, 1831, and after five years, it returned, having circumnavigated the world, and given to Charles Darwin a rich harvest of experiences in natural history. The object was to complete the survey of Patagonia and Tierra del Fuego, commenced under Captain King from 1826 to 1830, to survey the shores of Chili, Peru, and some islands in the Pacific, and to carry a chain of chronometrical measurements round the globe. Shortly after his return the naturalist was made a Fellow of the Royal Society. The immediate outcome of his journey was the publication of his interesting and valuable journals of the voyage. He also edited and contributed largely to the Official "Zoology of the Voyage of the 'Beagle.'"

Throughout the simple narrative of this journey, there peeps out at every page the evidence of Darwin's intense love of nature, and of his wonderful power of scientific observation. The great wealth of the natural records he brought back with him from the islands of the Atlantic, from the tangled luxuriance of Brazilian forests, from the pampas of the South, from the ranges of the Andes and Corderillas, from the coral reefs of the Pacific, from the islands of the South Sea, and from Australia, can scarcely be over-estimated; for the light they throw on biology, geology, and ethnology, on the habits and manners of savage peoples, on the phenomena of the ocean and of mountain chains, on the formation of icebergs, and on many other departments of science, is of very great value. Ever and anon, too, in this book, we find the foreshadowing of the theories which Darwin made his own, where he sees some evidences that seem to him to point to the truth of the hypotheses for which his grandfather had written so many years before. The first edition of the book was published in 1845. Before, however, this personal narrative was published, Mr. Darwin had helped in the official "Zoology" of the voyage, as stated above, and had brought out his monograph on the "Structure and Distribution of Coral Reefs," which was a revelation as to the work of the coral-building insects, besides a volume on "Volcanic Islands visited during the Voyage of the 'Beagle.'" In the next year his "Geological Observations in South America" appeared.

After his return, Darwin settled, in 1842, at Down, near Beckenham, Kent, where, up to the time of his death, he led the simple, studious, uneventful life of a man of science, but the germinal effect of his voyage was never lost upon him. His learned friends constantly visited him, and he was for some time secretary of the Geological Society. He had already married (1839) his cousin, Emma Wedgwood, and he lived in his country home a happy life, undisturbed and unfluttered by the sensation his works were making in the outside world. We must not lose sight of the fact that the naturalist's knowledge of science stretched far beyond the domain of biology, and that, in particular, he had made a considerable study of geology, upon the lines laid down by Lyell. The great question of the "origin of species," which Lamarck's influence had brought to the forefront, and which descended in a special manner as a heritage to Charles Darwin from his grandfather, began now to fructify in his mind. "After five years' work," he says, "I allowed myself to speculate on the subject, and drew up some short notes; these I enlarged in 1844 into a sketch of the conclusions that then seemed to me probable; from that period to the present day (1859), I have steadily pursued the same object." He began by wondering how the varied forms, which he conceived to be descended from a common ancestor, had received their admirably specialized organs, and proceeded with a study of domesticated animals and cultivated plants, which he found were further developed under man's care. Lastly, these speculations were fructified by a perusal of Malthus's " Essay on Population," which caused the idea of " natural selection"—" the survival of the fittest"—to occur to him. We see now the great naturalist's method of work, his slow and measured labour, his gradual approach, with his army of facts duly marshalled, to the end in view. From the time of his return from the " Beagle" expedition to the year 1858, when the first notes of his theory were presented to the Linnean Society, the theory of the origin of species and natural selection had been growing in Darwin's mind, and taking a shape in which it might be presented to the world. The years were long, and the outside public knew nothing of what was going on, for, subsequent to the issue of the " Geological Observations on South America," two monographs on Barnacles were the only distinct works that had come from Darwin's hands.

The book " On the Origin of Species by Means of Natural Selection" was published in 1859, but circumstances had rendered it desirable that the essential parts of its argument should appear in the " Journal" of the Linnean Society in the previous year. Mr. Alfred Russel Wallace, a biologist of great note in this country, was pursuing his researches in the Malay Archipelago, viewing the luxuriant animal and vegetable life of that clime in the light of the theories and speculations of the day, when the idea of natural selection occurred to him, and, having first submitted it to Mr. Darwin, he sent to the Linnean Society a paper in which he put it forward. This was the circumstance that induced Darwin to present his own long-considered hypothesis to the Society on the same day, when the papers were read together. " The Origin of Species" itself was looked upon by its author merely as a general exposition, to be thereafter illustrated and exemplified with instances and proofs in all its departments ; but, in fact, others took the work out of his hands, and, as time went on, it became less and less necessary for him to pursue his first intention.

It will be unnecessary here, at length, to set forth the careful way in which Darwin built up his hypothesis, how he traced the variability of species, illustrated it by their changes under domestication, carried the same effects into the long geological ages, and brought to bear " the struggle of existence" and the " survival of the fittest"—the great Darwinian doctrine of " natural selection." All these points are now very well known, and, in the heat of controversy, have been everywhere discussed. Darwin's great work, as a builder up of the theory that had descended to him, was, that he laid down the corner-stone of " natural selection," which gave it a strength it had hitherto lacked. But be did more ; he illuminated it with his vast knowledge of natural forms, and illustrated it from the richness and luxuriance of his thought and his observations. It is, however, important to remember, that his chief contribution to the theory of the origin of species was this factor of "natural selection," which he tells us occurred to him after reading the work of Malthus.

The book made its way gradually, but soon it was the talk wherever people of culture met, and there was not a coterie in the country where its theory was not discussed. The new teaching spread widely, as we shall presently see, and was received in many quarters, amongst men of science, both at home and abroad; it created for its author a circle of devoted admirers and adherents, who became the apostles of the new evangel, and presently, in every magazine, review, and newspaper, the arguments for and against it were set forth.

> "Those," said Mr. Huxley, when twenty-one years had passed, "who have watched the progress of science within the last ten years, will bear me out to the full when I assert that there is no field of biological enquiry in which the influence of the 'Origin of Species' is not traceable; the foremost men of science in every country are either avowed champions of its leading doctrines, or at any rate abstain from opposing them; a host of young and ardent investigators seek for and find inspiration and guidance in Mr. Darwin's great work; and the general doctrine of evolution, to one side of which it gives expression, finds in the phenomena of biology a firm base of operations, whence it may conduct its conquest of the whole realm of nature. . . . . . History warns us, however, that it is the customary fate of new truths to begin as heresies, and end as superstitions; and, as matters now stand, it is hardly rash to anticipate that, in another twenty years, the new generation, educated under the influences of the present day, will be in danger of accepting the main doctrines of the 'Origin of Species' with as little reflection, and it may be with as little justification, as so many of our contemporaries twenty years ago rejected them."

The works which followed the "Origin of Species" were nearly all connected, in some way, with its argument, and with the illustration of its speculations, and all showed Darwin's close knowledge of nature, and were interesting because they were from the new points of view he had selected. The "Fertilization of Orchids" (1862), a charming monograph, has led to a largely increased knowledge of the ways of plant-life and reproduction; and the "Movements and Habits of Climbing Plants (1865), is scarcely less interesting; but the volume on the "Variation of Animals and Plants under Domestication" (1868), was the first direct buttress of the theory, being intended as a magazine of facts to support it.

In our chronological arrangement we now reach the second great Darwinian book—"The Descent of Man"—which was perhaps the natural complement to the "Origin of Species," the logical conclusion of its argument; but it was received in many quarters somewhat coldly, because it wounded the *amour propre* of human nature. Yet it was in every way a most remarkable book, and was admired even where it was not received. The candour of Darwin in putting it forth cannot be too much praised. In this work his sincere love of truth compelled him to point out a number of places in which he had fallen into error, in overstating or misunderstanding his facts, and especially he felt that "natural selection" was not sufficient to account for all the special organs of animals. He brought in, then, "sexual selection" to fill the gap, and presented it with an astonishing richness of illustration. Still the majority of scientific thinkers dissented from the new addition to the theory, and especially Mr. A. R. Wallace, whose own observations had led him independently to "natural selection." Darwin, however, maintained that, when men of science had become familiar with the hypothesis, in which his own faith remained unshaken, they would adopt "sexual selection," as they had adopted "natural selection" before.

It may be well now, in a few words, to say how the theory of Darwinism was received generally by the scientific world. In England, not to speak of the younger generation of biologists, Professor Huxley and Sir Joseph Hooker were attracted early to the side of Darwin, and they were soon joined by Herbert Spencer, Sir John Lubbock, and Professor Henslow. Sir Charles Lyell held back for a long time, but at length he joined his scientific friends, and was as warm as they in his advocacy of the evolution cause. The Germans, led by Haeckel, came over to the camp almost in a body, and in many ways outdid the master himself; but France held back, and became severely and minutely critical, though here and there a Frenchman was found on the Darwinian side. It is a curious fact that the countrymen of Lamarck have not accepted the full development of the theories he propounded. The reasons that have led to this rejection have been clearly summed up by M. Emile Blanchard, of the Academy of Sciences, a typical *savant*, and his papers well deserve perusal.* With great minuteness he criticises the points of the Darwinian theory, bringing many illustrations with a view of overturning them, and, in his judgment, finds that they are either erroneous, or insufficiently supported by evidence.

> "On n'a jamais vu," he concludes, "et l'on ne saurait se figurer l'apparition d'un être ne dérivant pas d'un autre être ; ce serait donc folie de prétendre expliquer la création. Si, comme le supposent les adeptes du transformisme, toutes les espèces provenaient de quelques types primitifs, ou même d'une seule cellule primordiale, l'apparition ou de ces types, ou de cette cellule mère du monde vivant, ne serait ni plus explicable, ni moins extraordinaire à nos yeux, que l'apparition d'une multitude de créatures."

In America, opinion on the question was divided, and the discussion was closely followed ; but, advocates or opponents, all united in doing honour to the great genius Darwin.

Darwin's work lay thenceforth in illustrating, in a series of monographs, the side issues, and sometimes the central points, of his two great works. The first of these monographs was on "The Expression of the Emotions in Men and Animals" (1872), which showed the author's profound knowledge of character, as well as his old power of observation. This was followed, in 1875, by the "Insectiverous Plants," a minute study of some interesting features of plant-life, which may also be said of the "Effects of Cross and Self Fertilisation in the Vegetable Kingdom," a book pregnant with many suggestions. Darwin's next work, on "Forms of Flowers" (1877), was a treatise on one special point of botanical study—that of the varied shapes of blossoms on different specimens of the same plant—which was intended to display a single line of development. "The Power of Movement in Plants" (1880) was a remarkable monograph, replete with the treasures of long observation, as to the turning and rotation of the stems of climbers. The next year saw the last work of the eminent biologist, "The Formation of Vegetable Mould through the Action of Worms," which, perhaps more than any other of his books, tells us of the immense labour he bestowed upon the humblest subjects, and of the living interest with which he could invest any department of natural history to which he put his hand.

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* *Revue des deux Mondes*, 1874.

Darwin did not long survive the issue of this work. He had been for some time in failing health, and he was at the age of seventy-three. There was, however, no thought of immediate danger, but, on Tuesday, the 18th of April, 1882, he was suddenly taken ill at his own home in Kent, and, on the next day, he died. One of his last acts was to contribute munificently to the Association for the Advancement of Medicine by Research.

Enough has been said here to show what was the genius of Charles Darwin. Whatever one may think of the evolution hypothesis, which he revivified and sustained, there can be no question as to his intellectual power, or as to the influence his works have exercised, and are now exercising, over the scientific thought, and the methods of scientific enquiry in this age. Far beyond the region of biology this influence has spread, and physiology and medicine, the departments in which Darwin received his earliest scientific training, cannot afford to overlook the spirit of enquiry which he set afoot. Honours, it need scarcely be said, were showered upon him, but the catalogue of them is unnecessary here. Of his personal character, it may be said that he was above all things a lover of truth, and that he never hesitated, when the truth called for it, to retract a statement he had made, although that statement might be of weight in the theory of "natural selection." He was in all things humble, modest, gentle, and affectionate ; he was willing to aid those who sought his assistance, and his kindness and sympathy with the endeavours of others have been an encouragement to many. He left several sons, who are known with honour in the scientific world. The remains of the great biologist were buried in Westminster Abbey, though his family had wished that the quiet Kentish village should be the place of his interment. The statue of Darwin, by Mr. Boehm, R.A., which stands in the great hall of the British Museum of Natural History at South Kensington, is a memorial of him, which was presented to the trustees of the British Museum by a committee under whose auspices it had been erected. A substantial sum was also handed over to the Royal Society, under the name of the "Darwin Fund," to be devoted to the promotion of biological research.

In this biography all Mr. Darwin's chief works have been mentioned, but many of his writings are scattered in the pages of scientific publications. As, however, these have no direct bearing upon medicine, while their author was not a member of the profession, as he had originally intended to be, no attempt is made to give a list of them here.

HORACE DOBELL,

M.D.

DR. HORACE DOBELL is the third child of John Dobell, Esq. (his eldest brother having been the late Sydney Dobell, the poet), and he is a representative of an ancient Sussex family, which formerly had its seat at Streate-Place, in that county.

He was born in the City of London on the 1st of January, 1828, and received his early education at home. In 1842 he was articled as a pupil to the late Mr. Edward Fricker, F.R.C.S., a well-known Cheltenham surgeon, with whom he worked with untiring energy by day, continuing his general education by night under private tutors. So diligently did he employ his time, that, when his term of apprenticeship was over, he had read almost all standard works on Medicine and Surgery then published in the English language. The Literary and Scientific Institution of Cheltenham long preserved an excellent series of life-size chalk drawings of the skulls of various races executed by him during his studentship.

He entered St. Bartholomew's at the commencement of the winter session in 1845, and became a pupil of Lawrence, Burrows, Stanley, Skey, and Paget, being Dresser to the first and Clinical Clerk to the second. While thus occupied the artistic talent which he possesses in no slight degree was largely made use of by the Professors of Anatomy, Physiology, and Pathology, for the illustration of their lectures. That excellent Society, the Abernethian, which has done so much to train the minds of many Bartholomew's men, especially attracted his attention, and he read papers before it on several occasions during his studentship. In one of these, on "Post-nasal Catarrh," since included in his work on "Winter Cough," he first differentiated and named this complaint, now so well known in the profession. Another paper, "On the Class of Medical Literature most needed in the Present Day," was of exceptional merit and was subsequently published in a series of articles in the *Medical Gazette* of 1851. This paper attracted attention far beyond the limits of the medical world, and the *Athenæum*, in noticing it, remarked that it was "an able essay by a thoughtful and intelligent medical man." A further paper "On the Transmission of Disease from Parent to Offspring" was afterwards incorporated in a more extensive work.

While in his studentship he gained the Prizes for Surgery and Forensic Medicine;

Yours

Horace Dobell

and his "Bentley" Prize Essay, preserved in the library of St. Bartholomew's, is illustrated by a series of admirable coloured drawings representing clinical studies in the wards of the hospital. There is no doubt that the cultivation of the artistic faculty by those medical students who possess any talent for the use of the pencil would be of the greatest service in professional life.

Mr. Dobell took his first qualification, as Member of the Royal College of Surgeons of England, in 1849, at the age of twenty-one, and in the May of that year commenced general practice. In the following year, however, he discontinued pharmacy, and very shortly afterwards renounced midwifery, so that his practice was very nearly purely medical for several years before he became a Member of the Royal College of Physicians, by examination in 1856, and entered upon practice as a consultant. In that year, also by examination, he gained the M.D. degree of the University of St. Andrew's.

Dr. Dobell, as will appear in the course of this biography, has been an indefatigable writer on medical and scientific subjects, but he has made a rule of doing the whole of such work in those portions of his time which could not be devoted to the regular duties of his profession. In fact, his literary labours have been conducted after nine o'clock, and, during his later years in London, after ten and eleven o'clock at night. He has been constantly an early riser, and has devoted his days, up to late in the evening, to practical medicine—to seeing patients, to making analyses, microscopic examinations, and notes in connection with cases, and to professional correspondence. It has seemed to him right that literary work should not be touched until this was over, and he has always impressed the importance of the rule upon his pupils and young medical friends, in the interest of their patients, and as conducive to professional success. Dr. Dobell justly conceives the work of the physician to be all-absorbing, and far-reaching. "The practice of *rational medicine*," he says—"having for its object not only that most complex and wonderful fabric, the animal organism, but that organism endowed with all those attributes which place man but 'a little lower than the angels'—demands that there shall not be anything excluded from its service, and that every science and every art shall combine, at its bidding, to assuage the suffering, and to save the life of nature's highest earthly creature."* And again, he remarked, in a lecture at the Royal Hospital for Diseases of the Chest in 1861: "We are all members of a *practical* profession. We have taken upon ourselves high and responsible duties, all culminating in action. So long as we choose to assume these duties in a profession as yet so far from perfection, we are not justified in spending our time in scientific investigations or speculations, unless they have for their end some practical application for the good of humanity."† He considers that medical men are justified in practising their profession only in proportion as they believe in the articles of the following creed: "1. That man may be the instrument through whom the invasion and progress of premature destructive changes in the human organism may be prevented or arrested; 2. That man may be the instrument through whom the damaged organism may be more efficiently repaired; 3. That man may be the instrument through whom the sufferings of the human being may be alleviated." Dr. Dobell holds the chief objection to *specialties* in medical practice to be the danger that the doctor who treats one part of the body only may lose sight of the interdependence of diseases. Though this is a grave objection to very *narrow* specialties, he does not consider that it extends to the division of the practice of medicine into *Departments*—that is to say, to such a reasonable application of the principle of the "division of labour" as shall enable each practitioner to completely master the department of medicine which he selects for special study, and to advance the general knowledge of the profession by his investigations and experience. Impressed with these views of the importance of medicine, and of the practical methods to be pursued, Dr. Dobell has been enabled to do much work of real value in his professional career, and to throw light on many questions hitherto obscure or misunderstood.

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* "Diet and Regimen" (seventh edition), p. 11. † *Ibid*, p. 207.

One of his earliest contributions to practical medicine was a paper read in 1853, before the Abernethian Society, "On a New Method of Applying Heat, and of Maintaining the Temperature of Warm Applications," (developed, in 1874, into the invention of "Poulticing by Steam,") and in the same year he published in the *Medical Times and Gazette* a paper "On the Examination of Lives for Assurance." In 1854 appeared from his pen a paper in the *Medical Times and Gazette* containing a "Suggestion for Deodorising the Sewage of Houses by Individual Exertion," and the principles laid down in this paper were utilised later on by the proprietors of the "Universal Disinfecter." To the Royal Society, in the same year, he contributed a paper "On the Applicability of Gelatine-paper as a Medium for Colouring Light."

In 1856 Dr. Dobell determined to relinquish general and to engage in consulting practice; and to that end he took the degrees alluded to above. In 1857 he invented, and brought under the notice of the Society of Arts, the "Hœmantlion," a new instrument for facilitating the microscopical examination of the blood, as a means of diagnosis, and in 1858 he published his "Practitioners' and Students' Guide to Physical Diagnosis; Demonstrations of Diseases in the Chest," with thirty-six coloured illustrations. This is a work which was well received, and was acknowledged to have materially aided in the appreciation of the connection between physical signs and structural changes. In the same year, too, he published in the *Medical Times* *and Gazette* an acoustic explanation of "Amphoric and Tympanitic Resonance." In the year 1859 Dr. Dobell contributed to the Royal Society the results of his original experiments on "The Effects of White Light and Darkness on the Development of Animals;" and in this year he was elected Physician to the Royal Hospital for Diseases of the Chest. In 1860 he took an active part, in conjunction with the late Mr. Bromley-Davenport, M.P., and others, in the foundation and organization of the Society for the Relief of Distress, of which he was for some time almoner, and of whose working committee he is still a member.

In the following year Dr. Dobell published his "Lectures on the Germs and Vestiges of Disease," which had been delivered at the Royal Hospital for Diseases of the Chest, a work now out of print, referring to which the *Allgemeine Medicinische Central Zeitung* said: "The author of this work is one of the few physicians in practical England who occupy themselves with medical philosophy. He points out that the life of an animal depends upon a continued accumulation of fresh matter and of fresh force. A certain part of the force which manifests itself in the processes of life is transmitted to the germs of a new generation and secures the multiplication of the species. The principal causes of change in the force are, the 'conditions of life,' 'coetaneous diseases,' and the 'vestiges of disease.' Such vestiges of disease become 'causes of fatality' in other diseases; the fatality, in most cases, is not to be ascribed to the malady itself, but to the vestiges of some pre-existent disease. Abnormal physiological conditions manifest themselves by disturbances in the general condition of the health. As it is easiest to recover the health in this obscure state of the germination of disease, the author recommends periodical examinations of the state of health by competent medical men. Undoubtedly, such examinations, and advice based upon them, would be of great advantage."

In 1862 Dr. Dobell became a Fellow of the Royal Medical and Chirurgical Society, and, in 1864, was appointed Physician to the Royal Albert Orphan Asylum, in the foundation of which, in conjunction with Lord Charles Bruce and the late Mr. William Morley, he had taken an active part. In the same year he published his work on "Diet and Regimen in Sickness and Health," which reached its seventh edition in 1882, an elaborate book, in which he dwelt on questions relative to ventilation, heating, sleep, exercise, posture, bathing, rest and change, etc., with careful rules of regimen, followed by an elaborate series of tables, wherein all the percentages of alimentary principles in various articles of diet were calculated quantitatively and qualitatively. The year 1866 saw the publication of his work on "Tuberculosis: its Nature, Cause, and Treatment," a second edition of which was called for and published two months after the first.

In the year 1863 Dr. Dobell introduced to the profession the use of Predigested

Foods in wasting disease in the form of pancreatized fat, afterwards called "Pancreatic Emulsion," and has since, in 1867, published a "Report on the Use of Pancreatic Emulsion and Pancreatine." The idea of submitting foods to the influence of the digestive juices before introducing them into the alimentary tract, either by the mouth or rectum, was undoubtedly originated by him, and was first satisfactorily carried into practice by him in the form of this pancreatized fat, or pancreatic emulsion of fat, at the Royal Hospital for Diseases of the Chest in the year named, and was brought before the Profession by him in a series of papers in the *Lancet* in 1864, 1865, and 1866, and afterwards, in his works and reports. He claims, therefore, to have been the originator of predigested or peptonized foods, which now play so important a *rôle* in the cure and relief of wasting diseases. (See pp. viii. to xii. of the Introduction to Dr. Dobell's little book on "Tuberculosis," 2nd edition, 1866.) In December, 1867, Dr. Dobell brought the results of his original experiments on the special action of the pancreas on fat and on starch before the Royal Society. ("Proceedings," No. 97.) He several times found it necessary, in introducing the pancreatic emulsion to the profession, to publish a statement that, in accordance with an invariable rule, he had declined to have any pecuniary interest in it whatever. In fact, he has absolutely refused to receive the value of one farthing from this invention—for which he was pressed to take a Royalty on the sale that would have yielded many thousands of pounds. There has, perhaps, never been a case in the medical profession of so large a fortune being refused by an inventor on purely professional grounds.

In 1869 appeared the first volume of Dr. Dobell's admirable "Reports on the Progress of Practical and Scientific Medicine in Different Parts of the World," which was followed by a second volume in 1870. This work consisted of a series of original and independent reports by local practitioners of repute on the existing condition and recent progress of all parts of the healing art in every division of the globe. They were highly praised by the profession and the press, and have been of the greatest service as a means of spreading information as to the advances of medical science.

The great pressure of private practice which had by this time accumulated with Dr. Dobell, rendered it necessary for him to resign his active duties as Physician to the Royal Hospital for Diseases of the Chest, which he did in 1875. His resignation was accepted with regret, and the following resolution was proposed by Lord Charles Bruce and carried unanimously at a meeting of the Governors: "That Dr. Horace Dobell, who has for sixteen years most earnestly and faithfully discharged the duties of Physician to the Hospital, be now elected Consulting Physician." The annual report of the Governors contains the following expression of thanks: "It is with much regret that the Council announce the resignation of Dr. Dobell, who has been Physician to the Hospital for sixteen years. . . . . The Council, in the name of the Governors, beg to tender to Dr. Dobell their heartfelt thanks for his self-denying labours and most invaluable services, and to express their earnest hope for his future prosperity and happiness." We have omitted to mention that in 1872 Dr. Dobell produced another work—on "Affections of the Heart and its Neighbourhood; Cases, Aphorisms, and Commentaries," illustrated with photographs. In this work he was the first to call attention to two facts of clinical importance—firstly, the connection between certain throat symptoms and diseases of the heart; and, secondly, the explanation of "clubbing" of the finger ends in different forms of chest diseases.

The year 1875 saw the publication of the first volume of Dr. Dobell's "Reports on Diseases of the Chest," which was followed by two other volumes in the two succeeding years. But perhaps one of his most important works was that "On Loss of Weight, Blood-spitting, and Lung Diseases," published in 1878, and dedicated to his principal foreign coadjutators in the "Reports on the Progress of Medicine" above alluded to. This work the late Sir Thomas Watson called a "wonderful volume," and said of it: "Such a storehouse of instruction I have scarcely ever seen." A second edition of the book was published in 1880, with the addition of a sixth part on the functions and disorders of the liver, and their management in accordance with modern discovery. The work embodied such parts of Dr. Dobell's earlier publication "On Tuberculosis," and of other writings on Consumption then out of print, as he wished to reproduce rather than to re-edit in a separate form. The book was a minute and laborious study of Phthisis from a clinical stand-point, and, to quote the *Westminster Review*, will long remain a monument to its author's industry. Dr. Dobell attaches great importance to the fact that loss of flesh precedes constitutional decline instead of following it, and this is indeed the basis of his hypothesis as to the origin of tubercular disease—"the yielding up of the tissues to combustion by oxygen, in consequence of a defect in the supply of fat from the food into the blood." "The blood" he says "becomes deficiently and defectively supplied with fat elements from the food; is unable to afford those required for direct combustion; does not replace those taken up during interstitial nutrition; but, on the contrary, takes up more to compensate the deficient supply from the food. This having gone on up to a certain point, the fat elements of the albumenoid tissues"—including the albumenoid materials employed in the construction of tissues—"are seized upon, and these tissues are minutely disintegrated in the process. They are in fact reduced to ashes." It is, he says, "this disintegrated tissue that causes tubercle," and the lungs are the organs where the conditions for the disintegration exist most markedly. Pancreatized foods, which further the assimilation of fat, play naturally a large part in his treatment of phthisis. But he says (p. 218) "It should be our constant object, by the use of antiseptics, to stay decomposition and to disinfect the products of decomposition *in situ*, whenever they can be found and reached. It is with this view that I have always made inhalations of creasote, carbolic acid, or turpentine, a leading and essential part of my treatment of destructive lung disease;" and we find this again emphasized at page 117 of his work on Bournemouth.

In the year 1880 Dr. Dobell, who was well acquainted with the healthful character of the climate of Bournemouth, proposed to the resident medical practitioners that they should establish there a system of medical treatment, essentially similar to that known in Auvergne under the name of the Mont Dore Cure, and submitted his reasons for thinking that the system might be carried on at Bournemouth even more successfully than at Mont Dore, in Auvergne. Dr. Dobell being alone responsible for introducing this cure to England, felt called upon to accept the additional responsibility of teaching the profession how to use it, and of seeing that it was rightly carried out; and, with this intent, he published, in 1881, an excellent little work, entitled "The Mont Dore Cure in France and England." "It must never be forgotten," he said, "that it is a very definite and potent course of emphatically medical treatment, and will require the same skill and judgment on the part of the medical advisers at Bournemouth as is exercised at Mont Dore in the Auvergne, otherwise it will not have the same success." Under the direction of a public company, established to carry out Dr. Dobell's suggestions, a palatial building was completed from his plans, and with his advice, in 1885, and is now in full working order. There can be no doubt that the system of treatment carried out at the Mont Dore of Bournemouth, combining as it does under singularly favourable conditions the most potent and approved means of acting—(*a*) upon the skin, (*b*) upon the respiratory mucous membrane, (*c*) upon the urinary mucous tract, (*d*) upon the alimentary mucous membrane, (*e*) upon the circulatory system,—places at the command of the medical profession a more complete combination of the resources of enlightened modern medical treatment than has ever before been brought within their reach. In reference to the Mont Dore at Bournemouth, Dr. Dobell found it necessary to make a similar statement to that he published relative to his pancreatic emulsion. "In accordance with my invariable rule, in reference to *all remedies and means of medical treatment*," he says, "nothing will induce me to have any *pecuniary interest* in the commercial part of the above plans. Therefore I have nothing to do with the financial affairs of the Mont Dore Company. But as a *medical institution*, founded at my suggestion, I must always take a warm interest in its proper management." It may here be remarked that he made a similar statement, when introducing his invention of the "Heart Couch or Bed," in his work on "Affections of the Heart."

In 1882, the death of their second daughter induced Dr. and Mrs. Dobell to leave London precipitately, and to settle at Bournemouth, where they now reside, Dr. Dobell being still actively engaged as a consulting physician. Since going there he has published two works—one an exhaustive treatise, illustrated by his own pencil, on "The Medical Aspects of Bournemouth and its Surroundings;" the other on "Asthma; its Nature and Treatment," wherein he propounds "an entirely new and comprehensive working hypothesis," which provides a *modus vivendi* for the rival factions of clinical observers of asthma. The working out of the hypothesis, with the confluent testimony on the subject, is, however, too elaborate to be introduced here, and can only be understood by reference to the diagrammatic scheme of an asthmatic paroxysm which the author has appended to his work. While these pages are passing through the press, Dr. Dobell has also published a pamphlet entitled "Intelligence in the Van—The Beginning of the Beginning and the End of the End"—which embodies the view that "the position of the material universe is intermediate between Potentia in its primordial state of diffusion and its final state of individualisation. From the birth of the first atom of matter, through all the wondrous forms in which it is presented to the senses of conscious beings, including those beings themselves, it is but the medium for the attainment of the eternal ultimatum of man, 'when the spirit shall return to the God who gave it.'"

Dr. Dobell is a Fellow of the Royal Meteorological and other Societies. He married, in 1849, Elizabeth Mary, daughter of George Fordham, Esq., of Odsey House, Cambs., now well-known as a poetess and author. Amongst Mrs. Dobell's works may be named her "Ethelstone, Eveline, and other Poems," of which the "Gentleman's Magazine" said that it was "wonderfully sweet, and written in scholarly fashion;" her "Dark Pages," a dramatic story; and her series of poetical volumes, of which sixteen are now published, entitled "In the Watches of the Night," all having been well received. Dr. and Mrs. Horace Dobell had three daughters, of whom the eldest married Mr. W. Crowder Esdaile, and now resides in New Zealand, the second (now deceased) Dr. Charles Meymott Tidy, whose biography appears in this work, and the third Mr. G. Broke Freeman, M.A., barrister, eldest son of the late Archdeacon of Exeter.

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THOMAS MICHAEL DOLAN,

M.D., F.R.C.S. Ed.

THE subject of this memoir, who is widely known as a constant writer on medical and social questions, and than whom few members of the profession have had a larger experience in all classes of disease, was born at Cashel, county Tipperary, in 1844. After receiving a liberal education at Ushaw College, Durham, which is specially distinguished for its course of *Literæ Humaniores*, he proceeded to Steevens's Hospital, Dublin, where he studied earnestly for some time; and, after gaining the Licentiateship of the Royal Colleges of Physicians and Surgeons of Edinburgh, and of the Apothecaries' Society of London, in August, 1866, he commenced practice at Halifax, in the November of the same year.

Three years later Dr. Dolan was appointed medical officer to the Halifax Union Infirmaries, which position he has retained up to the present time. At the date of his appointment the wards placed under his charge were of the old workhouse character, but, upon the attention of the Halifax guardians being drawn to their shortcomings, they at once proceeded to erect infirmaries which may fairly vie with those at any similar institution as regards structure and general requirements. Workhouse infirmaries, although not at present fully recognized as fields of observation, supply abundant means of pursuing practical medicine in its various branches; and the work done by such men as Hutchinson, of spirometer fame, North of York, Stretch Dowse of London, and Alexander of Liverpool, furnishes abundant evidence of their value as a field for medical research. To Dr. Dolan's experience in this field, too, we owe many valuable contributions from his pen, and, as will be seen presently, it has led him to write upon the condition and prospects of the Poor-law medical service.

In the Halifax district, hydrophobia being of comparatively frequent occurrence, Dr. Dolan's attention was early directed to the disease, and several of his most important works are devoted to its pathology. The first of these was his "Rabies or Hydrophobia," published in 1878, which was intended to encourage research, and to which many advances in the curative treatment of the disease are unquestionably due. Hydrophobia, up to that time, had been abandoned to despair, and the general formula was that nothing could be done; but Dr. Dolan aimed at shewing that this was a fallacy. He was not prepared, he said, to write over the door of the patient's

Faithfully yours

Thomas M. Dolan

room the monition of Dante—*Lasciate ogni speranza*—and his words were almost prophetic. "Encouraged by the recoveries that have taken place," he said, "we venture to prophesy further successes, with some remedy wrested by the skill of the scientist from the grand laboratory of nature. We believe there is not a poison in existence for which there is not an antidote. We have faith in our profession, a faith, not resting on the changing quicksands of medical theories or opinions, but built on the sterling triumphs of medicine over diseases pronounced by our ancestors incurable. We cannot recognize, then, in rabies any special conditions which preclude us from hoping that the beneficence of the Creator, which enables us to grapple with other diseases, will grant us similar powers over this sad scourge of humanity." On the pathology of hydrophobia, Dr. Dolan laid down, in 1877, the following provisional conclusion, which has since been confirmed by M. Pasteur. "The phenomena of rabies, as evinced by morbid anatomy, depend on structural alterations in the medulla oblongata and spinal cord, influenced by a specific virus, the *modus operandi* of which is still involved in obscurity." These are words which are almost as true now as at the time when they were written. The favourable review of this work by Sir Joseph Fayrer, in "Brain," at once drew attention to it. The first edition was published anonymously, but the second appeared with the author's name; and of it Sir Joseph Fayrer writes: "It is by far the most complete work on the subject I have seen, and I am very glad to find it has been, as it deserved to be, so successful." In the hydrophobia competition, offered by Mr. V. F. Bennet Stanford, in 1879, Dr. Dolan sent in a contribution which was of such merit that it obtained a recommendation from the adjudicators—Drs. Brunton, Dickinson, and Ferrier—that the sum of £50 should be specially raised and awarded to the author. This competition was open to all nationalities; there were nineteen competitors, and the first prize was awarded to M. Bourrell, a veterinary surgeon, of Paris.

Dr. Dolan has since made several contributions to medical literature on the subject of hydrophobia, one of the latest of which is a *brochure* entitled "Hydrophobia; Pasteur and his methods: a Critical Analysis." Having foreshadowed the discoveries of the French *savant*, Dr. Dolan cordially welcomed his success. Whether Pasteur has succeeded or not, he says, in finding the preventive against rabies, his work deserves the highest praise, and must have a beneficial result, for it has encouraged research, and has infused hope into society, But Dr. Dolan is not satisfied with a remedy for hydrophobia; we have yet to extinguish the rabies in the dog. *Combattre la rage, c'est prévenir l'hydrophobie.* He has put his proposals for protecting both the dog and his master from the disease into a practical shape. In an article on the "Prophylaxis of Rabies," in the *Practitioner*, in 1881, he published an Act drawn by himself, intended to be stringent, compulsory, and repressive, which, if adopted, would afford a sound basis for an agreement amongst civilized governments for the abolition of the disease, and would certainly go far to keep dogs under better control, and to secure for them better protection. At the International Medical Congress, earlier in the same year, Dr. Dolan earnestly supported a motion proposed by Dr. Van Cappelle, of the Hague, that it was desirable the different nations should arrive at such an understanding as that alluded to above. Dr. Dolan thinks the time has come for more stringent measures. "Can rabies be extinguished in the dog?" he asks significantly. "If all dogs were vaccinated and rendered insusceptible—as Pasteur suggests—then, indeed, the consummation would be soon reached. Dog-owners, regarding the remote danger of rabies, will not resort to this method except under compulsion from Government." Thus, as a writer on the vital question of hydrophobia, Dr. Dolan is eminently practical, while his knowledge of the pathology of the disease is wide and profound.

Indeed, there is not one of Dr. Dolan's contributions to medical literature that has not sprung from actual experience in the treatment of disease; and, though he is one of the busiest of professional *littérateurs*, it may truly be said that the smallest part of his work is the literary part. His practice, especially amongst women and children, is very large, absorbing nearly the whole of his time, and his literary work has been done rather as a relaxation, in spare hours which he has been able to snatch from his professional labours. It is only by systematic method, and by study and application, that a general practitioner can accomplish so much; but the writings of Dr. Dolan prove what can be done even by a practitioner holding important public appointments, and enjoying at the same time a large *clientèle*. Much of this literary work has been done anonymously, in the form of leaders, annotations, and reviews; but the bibliography appended, which is necessarily imperfect, will shew what has been the nature of some of Dr. Dolan's acknowledged contributions to the public press.

One of the subjects which he has studied closely, and upon which he has written a good deal, is that of Life Assurance. Thus in 1875 he published in the *Medical Press and Circular* a series of articles on "Life Assurance for Poor-Law Medical Officers;" and, in 1881, he obtained the prize of £100 for the best essay on Life Assurance—a competition instituted by the Equitable Life Assurance Company of the United States, in which there were one hundred and sixty-three competitors. This Essay treated Life Assurance with special reference to its influence in promoting habits of economy, thrift, and sobriety; and the consequent repression of intemperance, poverty, and crime. Its bearing upon the reduction of the poor rate was also considered, as well as upon the cost of repression of crime, and in stimulating the productive industry of the country; and hence the national benefit conferred on the community in lessening taxation, while giving increased power to pay; and, finally, its influence upon our social surroundings, in strengthening family ties, and in rendering sacred the home. The judges were Mr. S. E. Hall and Mr. Cornelius Walford, with Mr. Tom Hughes, Q.C., as referee. In connection with assurance Dr. Dolan is one of the vice-chairmen of the Medical Sick and Benefit Society.

During the year 1881, a series of articles on "The Effects of Drugs during Lactation on either Nurse or Nursling" was contributed to the *Practitioner;* and of these the editor of that journal (Dr. Lauder Brunton) wrote:—"These admirable papers were sent to America in competition for the Boylston Prize. This valuable prize would have been awarded to them; but, most unfortunately, the publication of a part of them in the *Practitioner* previous to the award deprived the author of the prize." Not discouraged, however, by this, Dr. Dolan, in the following year, again contributed, and obtained the Boylston Prize of three hundred dollars for his essay on "Sewer Gas: its Physiological and Pathological Effects on Animals and Plants—an Experimental Inquiry." Nor is this the only prize that has fallen to Dr. Dolan's pen. In the year 1882 he obtained the much-coveted Fothergillian Gold Medal of the Medical Society of London for his essay on "Whooping Cough: its Pathology and Treatment;" and, in 1883, he gained the prize given by the Medical Institute of Valencia, in Spain, for his essay on "Heart Disease." After these successes, his brother practitioners in Yorkshire paid him the high compliment of entertaining him at a public dinner, when much gratification was expressed at the good work he had done.

Dr. Dolan's long connection with workhouse infirmaries and their medical service has led him to pay great attention to the subject; and in 1887 he published in pamphlet form a valuable series of papers on "The Poor-Law Medical Service: its Past, Present, and Future," in the course of which he reviewed the Poor-Law Medical Service from the time of the passing of the Poor-Law Amendment Act of 1834-5 to the present time. There is no doubt the Poor-Law Medical Service is open to great improvement, and the suggestions of Dr. Dolan, if adopted, would do much to improve the prospects of professional men in the service of the State. The suggestions for a Civil Medical Service, with the competitive system, are eminently practical, and such a service, Dr. Dolan believes, would be worthy of this country. "I trust I have made a few things clear," he concludes "viz., that I look upon the Poor-Law Medical Service as one of the most important services in the country, that I feel proud to belong to it, and that this service has a bright future before it." Dr. Dolan has written several other articles on Workhouse Infirmaries and kindred topics.

His general essays on medical subjects have been published in the *Lancet*, *British Medical Journal*, *Medical Times and Gazette*, *Medical Press and Circular*, and other papers. He contributed to the *British Medical Journal* a large part of the excellent account of the International Medical Congress at Copenhagen, which appeared in that journal. Owing to his well-deserved reputation as a writer he was invited by the proprietors of the *Provincial Medical Journal*, in July, 1885, to undertake the editorship of that paper, which had previously been conducted by Dr. Kenneth Millican, and afterwards by Mr. Ralph Atkinson, of the *Lancet* staff. The *Provincial Medical Journal* has since become, under Dr. Dolan's charge, a widely representative journal, and includes amongst its contributors some of the best medical writers of the day.

Dr. Dolan's popularity was shown when he contested, as a direct representative of the profession, a seat on the Medical Council, standing fifth on the list, and gaining 3,060 votes. He was honoured by being made a vice-president of the ninth International Medical Congress, held at Washington, in 1887.

Dr. Dolan obtained the Fellowship of the Royal College of Surgeons of Edinburgh in 1879, and became a Doctor of Medicine of the University of Durham in 1883. He is a Fellow of the principal medical societies, including the Medical Society of London, the Obstetrical Society of London, and the Medical Institute of Valencia ; and a Fellow and Member of Council of the British Gynæcological Society. He is popular in the town of his adoption, from the fact that he interests himself in most of the social questions of the day ; he is connected with the Free Library, the Literary and Philosophical Society, etc. ; and he lectures frequently upon health subjects, ambulance, and other matters of interest to the community. Before the latter society he delivered, in 1881, a remarkable lecture on "The Practical Value of Recent Researches on Bacteria," and a paper upon "Dangers to Health in Houses, Foods, and Drinks," which was afterwards published in the *Provincial Medical Journal*, was delivered as a lecture at the Dean Clough Institute, Halifax, and from a sanitarian point of view was full of interest to the audience.

Dr. Dolan married in 1876, and has issue three sons and two daughters. He is fortunate in having a wife who takes an almost equal interest in his work, acting as his *amanuensis*, answering all his correspondence, writing from dictation, looking up references, and thus lightening the labours incidental to a literary life.

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WILLIAM FARR,

M.D., D.C.L., F.R.S., C.B.

WILLIAM FARR was born at Kenley, in Shropshire, on the 30th of November, 1807, and, from the very early age of two years, was educated by Mr. Joseph Price, of Dorrington, near Shrewsbury, the Rev. J. J. Benyon directing his studies subsequently. In the year 1826, Mr. Farr became the pupil of Mr. J. Sutton, surgeon to the Salop Infirmary, and, further, read medicine and science with Dr. J. Webster, a young and talented physician. After pursuing this system of study for three years, he went to Paris, and, in 1829, entered as a student at its Medical School. Mr. Farr was very fortunate in the period of his sojourn in the French capital. A gifted band of teachers was then gathered together, and, during the two years which he passed there, he studied medical science under those celebrated men, Orfila, Dupuytren, Louis, and Lisfranc. He attended the lectures of Andral on Hygiene, of Gay-Lussac and Thénard on Chemistry, of Pouillet on Natural Philosophy, of Cuvier on the Natural Sciences, and of Geoffroy Saint Hilaire, Dumeril, and Blainville on Comparative Anatomy. Mr. Farr also studied with close attention the lectures on History and Literature delivered by Guizot and Villemain. It was without doubt under the influence of these minds—all of them remarkable for the exactness of their inquiries and their powers of generalization—that he received the inclination towards statistical medicine in which he afterwards held so distinguished a position. After travelling through Switzerland, he returned to London in 1831, and entered at University College, where, for two years, he studied under Grant, Carswell, Turner, Elliotson, and several others who distinguished themselves in that excellent medical school. He became a Licentiate of the Apothecaries' Society of London in 1832. After this, for a time, he filled the office of house-surgeon at the Shrewsbury Infirmary, but, finding that the institution offered but a limited field for his active mind to work in, he shortly returned to London. In the metropolis he commenced as a teacher of medicine, and attempted a course of lectures on Hygiology, but these were not successful, for the Public Health was not then a recognized subject in schools.

Mr. Farr began now to devote himself with his accustomed earnestness to scientific and professional journalism, and was for some time a principal contributor to the "British Annals of Medicine," his statistical and other articles being distinguished by a clearness of exposition and a lucidity of method which indeed characterized all

Yours Faithfully
W Farr

his writings. Amongst other articles that appeared from his pen were those on "A New Method of determining the danger and duration of Diseases at any period of their progress;" "On the Law of Recovery and Dying in Small-pox;" "On the Statistics of Insanity and on Lunatic Asylums;" "On the Exposure of Quacks;" "On Vital Statistics;" "On the Rate of Mortality in Sweden;" the "Hygiene of Barbarians;" "On Statistics of Insanity" (which ran through several numbers); and "On the Statistics of English Lunatic Asylums." These papers were all evidences of study and of devotion to the several subjects treated. The "Medical Annual" was edited by Dr. Farr, in conjunction with his friend, Dr. M. D. Thompson, about the year 1839. All his papers were replete with varied facts and statistical lore, and notable for their close reasoning and simple and forcible language.

It was given to Dr. Farr, by means of his quick grasp of facts and his large power of generalization, to cast a brilliant and far-reaching light through the arduous and apparently unattractive paths of statistical science, and to make the dry details of official returns give up such lessons as may be said almost to have created the science of sanitation, and to have enlarged the principles of medical science. Nowhere was his lucid inductive method more apparent than in the long and famous article, entitled "Vital Statistics," which he contributed to McCulloch's "Statistics of the British Empire." From that time Dr. Farr fully recognized—to use his own words—"the magnitude of the subject; and the fact that more than a million of inhabitants of the United Kingdom are disabled by diseases and suffering, is," he says, "of no less importance than the consideration that their condition may be ameliorated to a considerable extent." In this essay he gives a history of diseases, epidemics, etc., from early times, and also vivid descriptions of the causes of mortality at various ages and in various places. In one portion of the article, under the head of Epidemics, he says:—"In a thinly peopled and uncultivated country, the indigenous plagues may be generally traced to marshes, to famines, or to the congregation of great multitudes in the same spot for superstitious or warlike purposes. As civilization dawns, cities are constructed, but they are all at first rude inventions, where the supplies of air, water, and food are irregular, the narrow streets shut out the sun, the dirt, the animal excretions, and decayed organic matter are suffered to infect the air. In a high temperature the effluvial atmosphere becomes a deadly poison, and it is only as science advances and the construction of cities is improved, that epidemics decline." In another portion of the essay he says:—"If any proof were wanted of the inadequate supply of food, and the unhealthy dwellings of the English people, down to the seventeenth century, it would be found in the famines and plagues which still prevail with little mitigation." Again, he gives some valuable suggestions as to the means of promoting public health in Great Britain, saying:—"If Government can do little by direct enactments for the diminution of sickness, it is nevertheless their duty to determine by statistical enumerations the actual state of health, and the extent to which it is deteriorated in different circumstances. Returns of the diseases and deaths in the army, the navy, and all bodies of men employed in the public service, should be made annually ; and this, with the results of the general registration, would improve public health, by showing so distinctly the connection between diseases and their natural causes, that men would either avoid or obviate the evils destructive of health by some invention." Before concluding this well and thoughtfully written article, he remarks that "public health may be promoted by placing the medical institutions of the country on a liberal scientific basis, by the medical societies co-operating to collect statistical observation, and by medical writers denouncing the notion that a science can be founded on the limited experience of an individual. Practical medicine cannot be taught by books, the science of medicine cannot be got without practical experience. The healing art may be promoted by encouraging *post-mortem* examination of diseased parts, without which it is impossible to keep up in the body of the medical profession a clear knowledge of the internal changes indicated by symptoms during life. The practitioner who never opens a dead body must commit innumerable and sometimes fatal errors. It has been proved that, in the present state of things, the mortality is greatly augmented. Whenever large masses of people are brought together, it will be the duty of Government, the Municipal Corporations, and all classes of citizens, to render the towns of this country, and every establishment where large numbers are collected together, perfectly adapted to the wants of the human organization, and compatible with the full enjoyment of health."

Whilst presiding at the International Congress held in London in the year 1860, the Prince Consort said that the Statists of Europe were laying "the foundation of an edifice, necessarily slow of construction, and requiring for generations to come laborious and persevering exertions, intended, as it is, for the promotion of human happiness, by leading to the discovery of those eternal laws upon which that universal happiness is dependent." No one had done more towards securing this elevated position for statistics amongst the sciences than the subject of this memoir. Our forefathers would appear not to have appreciated the value of the registration of small facts and minute observations, and, because they did not appear to promise any immediate advantages, to have neglected them. Consequently, until a comparatively recent period, our statistical statements have been rather guessed-at truths than the results of careful inquiry, and, whether relating to people or property, they are found to be vague and unsatisfactory. A few men, convinced of the value of obtaining with all care, and in detail, every fact connected with population or with property, which could be expressed in numbers, originated the system of statistical inquiry, the value of which is now universally admitted. Amongst those who have been most active in promoting this, and in securing for the inquiry scientific accuracy, Dr. Farr stood especially prominent.

In the year 1837 the registration of all deaths, and of the causes of death, in England was commenced, and in the following year Dr. Farr secured an appointment as Compiler of Abstracts in the General Register Office, under Mr. Lister, who was the first Registrar-General. Here Dr. Farr organized the Statistical Department, of which he was made Superintendent, under Major Graham, the second acting Registrar-General. In this new department he assisted in compiling the "Quarterly Returns of Births, Deaths, and Marriages," and the "Annual Abstracts." In the year 1847 the honorary degree of Doctor of Medicine was bestowed upon him by the University of New York. Dr. Farr was now placed in the position for which he had specially trained his mind, and the result of the fortunate selection of the right man has been shown by his numerous and valuable labours. Amongst his important published works, "A Statistical Nosology" (1839), "Reports on Public Health and Causes of Death," and "Report on the Mortality of Cholera, 1848-9" (1852), are especially noteworthy. The elaborate report on the Cholera in England shows under what circumstances that epidemic is fatal, and that it is regulated in its ravages by definite laws. The value of Dr. Farr's labours in this most important department, it would be difficult to over-estimate. To his admirable reports is due in a great measure the hold which the question of public health, as a matter for practical and scientific consideration, has taken upon the public mind. To this inquiry he has imparted precision of aim, and, besides largely contributing to the accumulation of materials and inductively reasoning upon them, he may be fairly said to have laid a scientific basis for future investigators.

Dr. Farr has, together with his many other works, issued a pamphlet on a proposal for the "Conversion of the Assessments Levied on Public Salaries," under an Act, 4 and 5 William IV., chap. 24, into a provident fund for the support of the widows and orphans of Civil Servants of the Crown. This is a paper of considerable value to the Civil Service of this country, and was read (previous to being published as a pamphlet at the General Register Office) before the Statistical Society of London, on the 18th of December, 1849, and has been printed in the Journal of that Society. Shortly afterwards, Dr. Farr published a pamphlet on the "Funds to provide for the fatherless children and widows of Civil Officers,"—or of others—from a deduction out of their salaries. He says: "Children, women, and men advanced in years can rarely earn enough to supply them with subsistence. Men who enter a profession have, therefore, during their years of active life, not only to supply the current wants of their families, but to make a provision for the infirmities of sickness or age, and, in consequence of the mortality of their nature, for their widows and children." He then gives a table showing that in six States of Europe there are, to every four wives, one widow, and an unknown number of fatherless children, whom the returns leave unrecorded.

Pursuing his statistical work, Dr. Farr also produced, in the year 1851, a work entitled "Sections of the Report on Population, etc." (Census for 1851); and an essay "On the Construction of Life Tables, illustrated by a new Life Table of the Healthy Districts of England," subsequently appeared; while, in the Transactions of the Royal Society, in 1859, he published Reports on the Programmes and Proceedings of the International Statistical Congress, on Army Medical Statistics, and on the Health of the Army in India. Dr. Farr has also written on the "Finance of Life Assurance," and on the "Income Tax." It should be mentioned that he was appointed, with Mr. Horace Mann, one of the Assistant Commissioners to the Registrar-General, to take the Census of Great Britain in 1851. Dr. Farr also acted in the same capacity in 1861 and 1871. He wrote the valuable and curiously interesting reports on the numbers, ages, occupations, birth-places, and conjugal condition of the population. With Lord Herbert, he sat on the Commission of Inquiry into the Sanitary State of the British Army in India, and, as we have said, he wrote the statistical part of the report.

The Statists of Europe had long been endeavouring to organize an uniform plan of collecting and classifying statistical returns, and to this end it had been found desirable to arrange occasional meetings in different countries, which Dr. Farr attended on behalf of the English Government. Through the instrumentality of M. Quetelet, the Statistical Congress was organized, and in this undertaking he was strongly assisted by King Leopold of Belgium. In 1860, mainly through the exertions of Dr. Farr, the International Statistical Congress met in London, under the Presidency of the Prince Consort. This was the fourth meeting, the first having been held in Brussels, the second in Paris, and the third in Vienna. Dr. Farr, Mr. Valpy, and Mr. Hammack were the secretaries; but to Dr. Farr belongs the report which regulated its organization, and he was also the Editor of the Report on the Proceedings. This Congress was the most successful, and by its influence certainly greatly advanced statistical science. At all these congresses Dr. Farr and M. Quetelet were the foremost lights, and took the principal part.

Dr. Farr was one of the early supporters of the Statistical Society of London, and he was ever one of its most active members, and held the office of treasurer for twelve years, and was president for two years. In the year 1855 he was elected Fellow of the Royal Society; and in 1857 he received at Oxford the Honorary Degree of D.C.L. In 1859 he contributed the valuable paper on Life Tables, already named, to the Transactions of the Royal Society. Any person referring to this memoir must be struck with the logical precision with which each explanatory statement is made, and the perspicuity which distinguishes the enunciation of the laws regulating life and mortality. In 1864 Dr. Farr wrote the introduction to the "English Life Tables," described their construction, and laid down methods for determining values affected by time, life contingencies, and commercial risks. This is the first natural life table of a great State, and its principal series were calculated and stereotyped by Scheutz's calculating machine in use at the General Register Office, Somerset House. These labours placed the distinguished Statistician on a level with our foremost actuaries; and the honorary degree of Doctor of Medicine of Trinity College, Dublin, and the Fellowship of the King and Queen's College of Physicians of Ireland, were conferred upon him in 1867.

Again, referring to Dr. Farr's later works, we find him in the year 1870 publishing a "Report on Coinage," presented to the International Statistical Congress, held at the Hague, in 1869. In this work he gives an account of the progress of the question of metric weights and measures in England, and discusses proposals made for an international coinage. This subject is at the root of all comparative money statistics, and until there is an international money account, one of the great objects of the Congress must remain in abeyance.

Dr. Farr, never tiring of good work, published, some years back, a book on "Art and Science Schools," wherein he gave the number of such schools, in the United Kingdom, and also entered fully into the cost of them. In one portion of the book he says: "The Sciences and Arts need their schools, their galleries, their temples, as well as religion. Indeed, science and Art are part of the religion of every educated mind." Again, in the same work he remarks:—"The young will learn from Art habits of accurate observation, and their taste will be cultivated as they learn to love and admire the beautiful and good in common things as well as in great works. They have but to go to the National Gallery or South Kensington to see what pictures and statues Art has erected. And though a great portion of Art students, mayhap, may never accomplish great things, let them bear in mind the possibilities of the case. Turner, Gibson, and other artists, most illustrious in after life—the creators of many 'a thing of beauty' to be 'a joy for ever'—rose from not higher grades than the students in our art schools." He then proceeds to deal with Science Schools, treating Science in a very able manner, in its many different branches.

Dr. Farr was president of the Section of the British Association devoted to Economic Science and Statistics, during the meeting at Bath and at other places. His address on the opening of one of these sections was a most able essay on economic science and statistics, and it was so highly appreciated that it was printed, *in extenso,* in the Journal of the Statistical Society of London. The value of statistics is thus powerfully set forth in that address :—

" There can be no doubt that statistics, by disclosing the laws of life and reproduction, tend to improve the health and moral condition of the people, to point out the causes of disease, and to prove so plainly the utility of sanitary measures, that the people become willing to pay the expenses. In England the Registrar-General has, during twenty-seven years, shown how much the public health is deteriorated by destructive causes ; so in our towns they are in course of removal. Our army has been invigorated by statistics ; and the Commission over which Lord Herbert first, and after his death Lord Stanley, so ably presided, has proposed to endow India with the sanitary institutions of England." Dr. Farr was also Chairman of the Anthropometric Committee of the British Association.

These extracts from Dr. Farr's writings are given in order to show the many paths through which his wide sympathy and large grasp of facts led him ; and it will be seen that there are few questions of social science upon which statistics in his hands have not been made to shed abundant light.

In the year 1879, when Dr. Farr has served with distinction in the office of the Registrar-General for more than forty years, Major Graham, the acting Registrar-General, retired, and it was universally expected that Dr. Farr would succeed him. Major Graham, in concluding his report in that year, had said, " To his scientific research and reports I attribute any reputation that may have accrued to the General Register Office of England and Wales from the time that he accepted office in this department." But, to the astonishment of all, Dr. Farr was not appointed to the vacant post, and, deeming that he had been slighted, he resigned his office in the department, to the great loss of the nation. His services to science and to the public were not, however, overlooked. A committee was formed in order to present him with a testimonial on his retirement, and his absence from the position he had filled so long was a source of wide regret, Dr. Farr was made a Companion of the Bath by Her Majesty in recognition of his labours, and he was a member of many learned societies in England, and a corresponding member of the French Institute. He died on April 14th, 1883, and was buried at Bromley Common, Kent, on Friday, the 20th of the same month.

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Dr. Farr also edited the following works:—"British Medical Almanack," 1837-38; "Medical Annual and British Medical Almanack," 1839; "Report of the Fourth Session of the Congrès International de Statistique," 1861.

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WILLIAM HENRY FLOWER,

F.R.C.S., LL.D., F.R.S., F.Z.S., F.L.S., C.B.

PROFESSOR FLOWER, the eminent naturalist, Director of the Natural History Department of the British Museum, South Kensington, and President of the Zoological Society, is the second son of the late Mr. Edward Fordham Flower, J.P., of The Hill, Stratford-upon-Avon, and of Celina, eldest daughter of Mr. John Greaves, of Radford Semele, Warwickshire, and was born at Stratford-upon-Avon, November 30, 1831. He was educated at private schools, and at University College, London. An early taste for natural history pursuits, especially for collecting and dissecting animals, led him to select the profession of medicine, and, through the study of physiology, he has become one of the most distinguished anthropologists and biologists of the time. In 1849 he matriculated at the University of London, with honours in Zoology, and, in the same year, entered the medical classes at University College, and became a pupil at the Middlesex Hospital. During his studentship at the former institution, he gained the gold medal in Dr. Sharpey's class of Physiology, with the silver medal in Zoology, and passed the first M.B. at the London University in 1851, coming out in the first division. He became a Member of the Royal College of Surgeons of England on March 27, 1854; and, a few weeks afterwards, being desirous of improving his knowledge of Surgery, he joined the Medical Department of the Army, with a view to serving in the campaign about to be commenced against the Russians. After spending a few months with the Depôt Battalion at Templemore, in Ireland, he was gazetted as Assistant Surgeon to the 63rd Regiment, and embarked at Cork in July for Constantinople. The regiment joined the main army at Varna, and took part in the expedition to the Crimea, in which it suffered very severely from exposure to the severity of the climate during the early months of the campaign. For ten weeks officers and men alike did not take off their clothes, night or day, and for the first three weeks they slept every night in the open air. The influences which caused the death of nearly half the strength of the regiment in four months, affected Mr. Flower's health; he was invalided to England, and, soon after, received from the hands of the Queen the war medal, with clasps for Alma, Inkerman, Balaclava, and Sebastopol.

An opportunity having presented itself for joining the staff of the Middlesex

Yours very faithfully

W. H. Flower

Hospital as Demonstrator of Anatomy, he now resigned his position in the army to carry out the intention (from which he had only been temporarily diverted by the prospect of gaining professional knowledge in the field) of settling in practice in London. He passed the examination for the Fellowship of the Royal College of Surgeons in May, 1857, and next year was elected Assistant Surgeon to the Middlesex Hospital. He also became Curator of the Museum, and Lecturer on Comparative Anatomy in the same institution. While holding these offices he published a work called ' Diagrams of the Nerves of the Human Body," which has passed through three editions, and contributed the article on "Injuries of the Upper Extremities," which contained some original observations upon dislocations of the shoulder-joint, to Holmes's "System of Surgery." He also contributed a paper on the same subject to the Pathological Society, and several articles on various surgical subjects to the medical journals. In 1858 he married Georgiana Rosetta, youngest daughter of Admiral W. H. Smyth, F.R.S., the well-known Astronomer and Hydrographer.

In 1861 the important office of Conservator of the Museum of the Royal College of Surgeons of England, commonly called the "Hunterian Museum," became vacant by the death of Professor Quekett. The collections under the conservator's charge are extensive, and of very varied nature, embracing Surgery, Pathology, Anatomy, Physiology, Zoology, and Palæontology, and some knowledge of each of these subjects is required by the occupant of the office. The appointment was, however, congenial to Mr. Flower's tastes, and for it he relinquished the practice of his profession and his connection with the Middlesex Hospital, and thenceforth devoted himself to scientific pursuits. The care of the Museum, and its complete re-organization and gradual augmentation, constituted for many years his principal employment, every department having, unfortunately, fallen into arrears, as regards cataloguing and arrangement, when he took charge of it. The Hunterian Professorship of Comparative Anatomy and Physiology, in the Royal College of Surgeons, which for twenty-five years had been held in conjunction with the Conservatorship of the Museum by Professor Owen, had been separated from it some time previously, and was now held by Professor Huxley, who, however, was compelled, by the pressure of other engagements, to relinquish it in 1869, when the two offices were again united by the appointment of Mr. Flower to the Professorship. The duties attached to it consist in the delivery of a short course of lectures, on a different subject each year, illustrated by the preparations of the Museum; and Professor Flower's addresses have contributed much to our knowledge of Comparative Anatomy. Thus his lectures, delivered in 1870, on "The Osteology of the Mammalia," which have since been collected in a volume, and have gone through three editions, are well known to all biologists, and to most medical students. He has also lectured at the College on the "Cetacea," a group of animals to which he has devoted much attention; but his several series of Hunterian lectures on "The Comparative Anatomy of Man" should be specially noticed, as dealing with exceedingly difficult and complicated problems. "Comparative anatomy," said Professor Flower, "is specially occupied in studying the differences between one man and another, estimating and classifying these differences, and especially discriminating between such differences as are only individual variations (variations which when extreme, are relegated to the department of the teratologist), and those that are inherited, and so become characters of distinct groups and races of the human species. Physical anthropology, moreover, extends its range beyond merely comparing and registering these differences of structure. It also occupies itself with endeavouring to trace their cause, and the circumstances which may occasion their modifications. It endeavours, also, to form a classification of the different groups of mankind, and so to throw light upon the history and development of the species." With these objects in view, the Hunterian Professor set himself to study closely, and to explain with great clearness, the characteristics of the Australian races, of the Tasmanians, Melanesians, and Polynesians. Special attention was paid to the anatomy of the diminutive Andamanese race, which was illustrated by a series of skeletons. collected at the request of Sir Joseph Fayrer by Dr. J. Dougall, and by others belonging to Professors Rolleston and Allen Thompson. Professor Flower suggested as an hypothesis that these curious people might be "the unchanged or little modified representatives of a primitive type, from which the African Negroes, on the one hand, and the Oceanic Negroes on the other, have taken their origin." To this curious and interesting subject Professor Flower devoted a valuable paper, filled with the results of original investigation, at the Anthropological Institute in June, 1879. Proceeding with his Hunterian lectures, he described the osteological characters of the races of India; the Mongoloid, and other people of Asia; the Eskimo, and the natives of America and of Asia, including the modifications of the negro type. "The much vexed questions," he says, "Who were the Egyptians? and Where did they come from? receive no answer from anatomical investigations, beyond the very simple one that they are one of several modifications of the great group of races which inhabit all the lands surrounding the Mediterranean Sea; that they there lived in their own land far beyond all periods of time measured by historical events, and that in all probability it was there that they gradually developed that marvellous civilisation which has exercised such a powerful influence over the arts, the sciences, and the religion of the whole Western world." This invaluable series of Hunterian lectures, in which the Professor traced the physiological racial characteristics of mankind with great clearness and accuracy, won much praise from the scientific world.

Professor Flower was elected a Fellow of the Royal Society in 1864, has served several times on the Council, and was Vice-President in 1884-5. In 1879, on the death of the Marquis of Tweeddale, President of the Zoological Society, he was elected to succeed him in that office, having been many years previously a member of the Council, and one of the Vice-Presidents. He became a Vice-President in 1879, and, in 1883, was elected President of the Anthropological Institute of Great Britain and Ireland—a well-deserved honour. At the Anniversary Meeting of the Institute on January 22nd, 1884, he delivered a Presidential Address on "The Aims and Prospects of the Study of Anthropology," which, from his distinguished position in regard to that science, has a particular interest. One of the great difficulties, he says, of making anthropology a special subject of study is the multifarious nature of the branches of knowledge comprehended under the title; for, far exceeding the limits of ethnology, it investigates the origin of mankind, and his relations to the rest of the universe. It invokes the aid of zoology, comparative anatomy, and physiology. "Here we are drawn into contact with an immense domain of knowledge, including a study of all the laws which modify the conditions under which organic bodies are manifested, which at first sight seem to have little bearing upon the particular study of man." Furthermore, anthropology deals, not only with man's bodily structure and its relations to that of the lower animals, but with the moral and intellectual sides of his nature, and the study of comparative psychology is an important factor in its system. Again, the anthropological student must also be a geologist and pre-historic archæologist. After thus indicating the vast inquiry upon which he, and the Institute over which he presided, were engaged, Professor Flower alluded to its recent advances, mentioning the publication of the Final Report of the Anthropometric Committee of the British Association; the impulse given to the science at Oxford, through the genius and energy of Rolleston; the appointment of Mr. E. B. Taylor, the distinguished ethnologist, to a Readership in Anthropology there; and the formation of an Ethnological and Archæological Museum at Cambridge, with Baron Anatole von Hügel as its curator. His second Presidential address, delivered on January 27th, 1885, was chiefly devoted to an exposition of his views on the Classification of the Varieties of the Human Species. In this he says that, after a perfectly independent study of the subject, extending over many years, he cannot resist the conclusion so often arrived at by anthropologists, and so often abandoned for some more complex system, that the primitive man, whatever he may have been, has, in the course of ages, divaricated into three extreme types, represented by the Caucasian of Europe, the Mongolian of Asia, and the Ethiopian of Africa; and that all existing individuals of the species can be ranged around these types, or somewhere or other between them. The recent progress of the Anthropological Institute is due in no small degree to the energy and knowledge of Professor Flower.

In connection with the British Association for the Advancement of Science, the Hunterian Professor has held the offices of Vice-President of Section D (Biology), presiding over the department of Anatomy and Physiology at the Norwich meeting in 1868. He was President of the Section at the Dublin meeting in 1878, and President of the Department of Anthropology at the meeting at York in the year 1881. Again, in 1885, he was a Vice-President of the Association at the Aberdeen meeting. At the Dublin meeting, after reviewing the progress of zoological knowledge since the time of Linnæus, he suggested to the Association the formation of a Committee of Naturalists of various nations, selected according to the various subjects with which each is familiar, to deliberate upon the question of classification and nomenclature, upon the basis of the laws issued by the Association in 1842. Professor Flower is also a Vice-President of the Linnæan Society, and has long been prominently connected with the Royal Institution, before which he has delivered a number of lectures on subjects of biological and anthropological interest—notably on "The Palæontological Evidences of the Gradual Modifications of Animal Forms," 1873; "The Extinct Animals of North America," 1876; "The Native Races of the Pacific," 1878; "Fashion in Deformity," 1880; "Whales, Past and Present, and their Probable Origin," 1883; and "The Wings of Birds," 1886.

Professor Flower was President of the Anatomical Section of the International Medical Congress held in London in August, 1881, selecting as the subject of his inaugural address a history and description of the Museum of the Royal College of Surgeons. He has been several times an Examiner for the Natural Science Tripos in the University of Cambridge, and, in 1878, received the Honorary Degree of LL.D. from the University of Dublin.

At the Anniversary Meeting of the Royal Society, in November, 1882, one of the Royal Gold Medals was awarded to him by the Council, in recognition of his services to science "in extending our knowledge of comparative Anatomy and Zoology in general, and of the Mammalia in particular;" and because, as stated in the President's address when presenting the Medal, "it is very largely due to his incessant and well-directed labours that the Museum of the Royal College of Surgeons at present contains the most complete, the best ordered, and the most accessible collection of materials for the study of vertebrate structures extant."

At the meeting of the Church Congress at Reading, in October, 1883, at the request of the Commmittee, Professor Flower opened the discussion on "Recent Advances in Natural Science in their relation to the Christian Faith," by giving a simple and concise statement of the position of the doctrine of evolution, his object being to mitigate the prejudices of many of the strongest opponents of the doctrine amongst the Clergy. The paper was printed in the report of the meeting.

In the year 1884, on the resignation of Sir Richard Owen, Professor Flower was appointed by the Trustees of the British Museum to the important office of Director of the new Natural History Museum at South Kensington. This necessitated the resignation of his appointment at the Royal College of Surgeons, which he had held for twenty-two years, and the following resolution was passed by the Council of the College on the motion of Sir James Paget, seconded by Mr. Erichsen :—

"That the Council hereby desire to express to Mr. William Henry Flower their deep regret at his resignation of the office of Conservator of the Museum of the College. That they thank him for the admirable care, judgment, and zeal with which for twenty-two years he has fulfilled the various and responsible duties of that office. That they are glad to acknowledge that the great increase of the Museum during those years has been very largely due to his exertions, and to the influence which he has exercised, not only on all who have worked with him, but amongst all who have been desirous to promote the progress of Anatomical Science. That they know that, whilst he has increased the value and utility of the Museum by enlarging it, by preserving it in perfect order, and by facilitating the study of its contents, he has also maintained the scientific repute of the College, by the numerous works which have gained for him a distinguished position amongst the naturalists and biologists of the present time. And that, in thus placing on record their high appreciation of the services of Mr. Flower, the Council feel sure that they are expressing the opinion of all the Fellows and Members of the College, and that they all will unite with them in wishing him complete success and happiness in the important office to which he has been elected."

Amongst Professor Flower's many honourable distinctions, it may be mentioned that he was appointed a Trustee of Sir John Soane's Museum, on the death of Mr. F. Ouvry, and that he was also elected, in 1885, a Trustee of the Hunterian Museum. He is in addition an honoured member of many learned societies. On the occasion of the tercentenary of the University of Edinburgh, he was one of the distinguished men of science selected to receive the Honorary Degree of LL.D. He was also of the few whose services in the cause of knowledge were recognized in the "Jubilee" Gazette of June 21st, 1887, when the Companionship of the Bath was conferred upon him.

Although, as before mentioned, the work connected with the Hunterian Museum was his principal occupation for twenty years, Professor Flower has made many contributions to the literature of anatomy, zoology, and the kindred sciences. Most of these have been published in the journals of various societies, but of his separate works three, at least, are invaluable to medical and anatomical students. Amongst these distinct works are his Supplement to Sir James Paget's "Catalogue of the Pathological Series in the Museum of the College of Surgeons," rendered necessary by the great additions to the treasures of the Museum ; and his "Catalogue of the Specimens illustrating the Osteology and Dentition of Vertebrated Animals, recent and extinct," in two parts—Part I., "Man;" Part II., "Mammalia." The study of these catalogues is indispensable to all who are engaged in the investigation of physical anthropology, to those especially who may be working with the craniological specimens in the Museum of the Royal College of Surgeons. In the "Catalogue of Human Osteology" will be found Professor Flower's extensive researches in craniology, in which he has adopted, with certain modifications, the method of measurement recommended in the "Instructions Cranialogiques," by Paul Broca, published by the French Anthropological Society. Professor Flower thinks the measurement of the whole capacity of the skull most valuable, though he does not regard a large head as an invariable indication of intelligence. The weight of the brain is, however, more unsatisfactory, because it differs with age, health, etc., and it has, moreover, the great disadvantage of being an inapplicable test in the case of extinct races, and of skulls in the great museums. The "Introduction to the Osteology of the Mammalia" (a series of Lectures at the Royal College of Surgeons), alluded to above, published by Professor Flower in 1870, is invaluable to University Candidates for Honours in Biology. He has also contributed very important papers to the "Philosophical Transactions of the Royal Society," to the "Transactions of the Zoological Society," the "Journal of the Anthropological Institute," the "Quarterly Journal of the Geological Society," the "Natural History Review," the "Journal of Anatomy and Physiology," the "Transactions of the Odontological Society," "Nature," and many of the medical journals, most of which will be found enumerated below. He has likewise written for the new edition of the "Encyclopædia Britannica" the important article on the "Mammalia," and many other papers on zoological subjects.

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Yours truly
M Foster

SIR (BALTHAZAR) WALTER FOSTER,

M.D., L.R.C.S., F.R.C.P., M.P., J.P.

SIR WALTER FOSTER is a descendant of an old Hampshire family, and was born near Cambridge in the year 1840. He began his education in Ireland, at the Grammar School, Drogheda, where he was distinguished as an excellent classic, and had read, before he was sixteen, the whole undergraduate course of Trinity College, Dublin. He received his professional training at the Medical School of the Royal College of Surgeons, Dublin, and while there achieved distinction by his proficiency in anatomy. His general attainments, and the intimate knowledge of this branch of study which he had acquired, were such that, during his studentship, he was appointed as senior Prosector of Anatomy in the School, the present Professor of Anatomy in the University of Cambridge, Dr. Alexander Macalister, being his co-prosector. He was also Clinical Assistant to Professor Stokes, at the Meath Hospital, Dublin. In the early part of the year 1860 he took his L.R.C.S., and also became a Member of the King and Queen's College of Physicians.

The high reputation which Dr. Foster had gained whilst at Dublin secured for him success in his application for the offices of Demonstrator of Anatomy and Medical Tutor in Queen's College, Birmingham, his appointment to these offices occurring also in the year 1860. He was at the same time appointed Assistant Physician to the Queen's Hospital, Birmingham; and, four years afterwards, he accepted the appointment of Physician to that institution. In 1864 he was appointed Professor of Anatomy at Queen's College, Birmingham, but this office he resigned in the following year, and accepted the appointment of Lecturer on Materia Medica at Sydenham College. The change was regarded as being desirable, inasmuch as the rivalry of the two Schools of Medicine in Birmingham, that at Queen's College and that at Sydenham College, was injurious to the development of a thoroughly vigorous and large medical school. Dr. Foster hoped by the change to promote the fortunes of the School connected with the larger Clinical Hospital, and so to bring about the existence of one School in the Midland Metropolis. This object was effected a few years later, not as had been anticipated by the junction of Queen's College with Sydenham College, but by the transference of the teaching staff of Sydenham College to Queen's, after the latter institution had been re-constituted by Act of Parliament. On this occurrence, in 1868, Dr. Foster was appointed joint Professor of Medicine with the late Dr. James Russell, but, from 1876 to 1885, he filled the chair of Medicine alone. In 1885 he took as a colleague his former pupil, Dr. (now Sir James) Sawyer. In 1861, a very good and flattering offer had been made to Dr. Foster by the late Professor John Morgan, that he should return to the scene of his early achievements in Dublin, and become Medical Tutor at the Royal School, where he had formerly been a pupil. He, however, declined this offer, preferring to remain in Birmingham. In 1868, he left the Queen's Hospital to join the larger institution of the Birmingham General Hospital as one of the Physicians.

Dr. Foster's contributions to medical literature have been numerous and able, and have met with great success. Papers on clinical medicine emanating from his pen appeared in the *Dublin Quarterly Journal of Medical Science*, the *Medical Times and Gazette*, and other periodicals, as early as the year 1863. His first paper was published in the *Medical Times and Gazette* in that year, on a remarkable case of "Colloid Cancer of the Great Omentum." Another paper from his pen which attracted notice was "On Cyanosis from Patent Foramen Ovale," published in the same year, which contained a number of original observations of the bodily temperature of cyanotic patients and of the effects of drugs in promoting increased body-heat. Soon afterwards, in a series of papers in the *British Medical Journal*, *Dublin Journal*, and *Lancet*, Dr. Foster laid down the Rational Treatment of Ulcer of the Stomach by absolute rest, and showed, by a number of clinical observations, the efficacy of stopping all food by the mouth in these cases and feeding the patients on nutritive enemata. The indications to be fulfilled in the treatment of ulcer of the stomach, he says are two—the promotion of the healing of the ulcer, and the alleviation of the symptoms. By giving the viscus *complete* rest from all physiological action, and from all mechanical irritation, the great impediments to the healing process are removed, which consist in the movements of the stomach consequent on the ingestion of food, and in the mechanical and chemical irritation of the ulcerated surface produced by the food and gastric juice. The second indication, as Dr. Foster showed, is also fulfilled, for the pain and vomiting cease, and the hæmorrhage seldom if ever returns, while the patient, placed in the conditions for causing the least possible tissue-waste, is fairly nourished, and in many cases even strengthened by the use of suitable nutritive enemata. Dr. Foster was the first to formulate this treatment, and his papers attracted much attention in this country and on the continent, being republished abroad, more especially in the Italian journal *L'Imparziale*. He also published in 1866 a course of lectures on "The Nature and Treatment of Dyspepsia," in the *Medical Press*. That year also he issued his book on the Sphygmograph, the first ever published on the subject in this country, Dr. Foster being one of the earliest medical authorities on the importance of the use of this instrument in researches on the circulation. He also read a paper on the subject of the Sphygmograph, and was the first to suggest improvements therein for estimating the pulse-tension, at a meeting of the British Association for the Advancement of Science, held at Nottingham in 1866. His treatise on this subject has been described by a high medical authority as "a most explicit, full, and undoubtedly faithful description of the instrument, by a practical physician and an industrious clinical teacher." He contributed papers on the Sphygmograph and Cardiograph, and others on the Pulse and its form, as revealed by the first-named instrument, to the *Journal of Anatomy and Physiology*, as well as papers on the same subjects to other medical journals, including several on the "Graphical Method in the study of Diseases of the Heart and Great Vessels," in the *Medical Times and Gazette.*

In 1868, in a paper on "The Use of Ether in the Treatment of Phthisis," read at the Oxford meeting of the British Medical Association, Dr. Foster drew the attention of the profession to the remarkable powers possessed by ether in promoting the flow of pancreatic juice, and so aiding in the assimilation of fatty food. "Ether," he said, "not only increases the secretions required to digest fats, but promotes the absorption of these fats when digested. Can any physiological action be more clear?" He then went on to speak of his experiments in testing the value of this discovery by administering ether in all cases characterized by inability to digest fat, giving ether in combination with cod-liver oil, or alone, before meals. The results were most satisfactory; the oil was digested more easily, and the nutrition of the patients greatly improved. In a second more systematic inquiry Dr. Foster treated fifty cases, taken from the Birmingham Dispensary, each patient being examined on admission, and at least once every fifteen days during treatment. At each examination a physical exploration of the chest was made, and the weight of the patient was taken. Of sixteen patients admitted in the first stage of the disease, seven improved in general symptoms and in physical signs, gaining on an average seven and half pounds each, five remained stationary, and only four became worse. Of nineteen cases in the second stage, six improved in all respects, gaining considerably in weight, six remained stationary, and seven became worse. Of fifteen cases in the third stage, seven improved and gained in weight, five remained stationary, and three became worse. These results were highly instructive, as showing (1) the effect of ether in increasing weight, and (2) that the digestion of fatty food is restored to its normal state, in many cases, after a long course of ether. Dr. Foster also recorded that his patients expressed a great preference for etherized cod-liver oil, and, in fact, took it quite readily. These experiments were made with scrupulous care, and all sources of fallacy were, as far as possible, eliminated. Thus, starting from physiological facts, Dr. Foster used the simpler science of physiology to assist him in adding a new fact to the more complex subject of therapeutics. He considers this discovery to be his best piece of work, and it has established the value of ether, and led to the extensive use of etherized cod-liver oil in Phthisis and other wasting diseases.

In 1869 Dr. Foster published in the *Journal of Anatomy and Physiology* some original observations on "The Subnormal Temperature of Patients affected with Diabetes." He was the first to call attention, we believe, to this subject in England, although he afterwards found that his observations had been anticipated in Germany.

In 1870 he contributed an important essay, entitled "Method and Medicine," to a volume published by the Birmingham Speculative Club. This essay was also published separately, and attracted considerable attention. One medical journal described it as "an eloquent and successful attempt to show that method and medicine are more intimately connected than some have asserted." Another critic wrote: "It displays at once the scholarship of an able physician, and the style of a by no means inexperienced writer." A detailed reference to all the interesting and important contributions of Dr. Foster would occupy considerable space, and readers are therefore referred to the works themselves. His lecture on the Prevention of Disease, delivered after the recovery of the Prince of Wales in 1872, entitled, "The Prince's Illness: its Lessons;" and his address—"written for the purpose of placing before the working classes the lessons taught by the statistics of the comparative mortality of our large towns," have an interest of a more general nature. Later on, in 1874, Dr. Foster delivered a lecture, which was afterwards published as a pamphlet, entitled "How we Die in Large Towns," treating of the comparative mortality of Birmingham and other great centres of population, of which several thousands of copies were sold. In 1874 he published his "Clinical Medicine: Lectures and Essays," a book which had a most successful reception and rapid sale. It contained, in addition to some of the papers we have referred to, the remarkable observations of the author on the Synthesis of Rheumatic Fever by the administration of Lactic Acid, (a series of observations since repeated and confirmed in Germany), and also very valuable papers on the Therapeutical action of Digitalis. A clinical lecture on Rupture of the Aortic Valves was also one of the most valuable chapters in the book. This was a very careful piece of reasoning, as was also the concluding essay on "Embolism after Thoracentesis." Since 1874 Dr. Foster has had less time amid the responsibilities of practice for much writing. We find, however, that he was the first to discuss in this country the form of sudden death in Diabetes now generally termed acetonæmia, in a very exhaustive paper published in 1878, and he has since made other observations on the same subject. Quain's "Dictionary of Medicine" contains also several papers from his pen, among which we may notice the articles on

Valvular Diseases of the Heart, and on the Pulse, the Sphygmograph, and the Cardiograph. He also, in 1881, wrote a number of valuable papers on the "Treatment of Pleuritic Effusion."

Notwithstanding the demands upon his time, Dr. Foster has found leisure to take part in matters connected with the town and county of his adoption, not purely professional in their nature, Thus he is a Justice of the Peace for the County of Warwick. He fulfilled the duties of Secretary to the Health Section of the Social Science Congress at its meeting at Birmingham in 1868. He was joint Secretary, with the late Mr. J. S. Wright, M.P., of the Grammar School Reform Association from the commencement to the close of its onerous labours. In 1883 he entered the Birmingham Town Council, of which he is still a member. He was also the first President of the Irish Graduates' Association, on its formation in 1878, and, for some years after, acted as its Treasurer. In the year just mentioned he was elected President of the Medical Benevolent Society, and afterwards was one of its trustees. He is a Doctor of Medicine of the University of Erlangen ; a Fellow of the Royal College of Physicians of London ; a Fellow of the Royal Medico-Chirurgical, Pathological, and Medical Societies of London ; Honorary Member of the Surgical Society of Ireland ; Honorary Corresponding Member of the Physico-Medical Society of Erlangen ; and Consulting Physician to the West Bromwich Hospital, and Birmingham Ear and Throat Infirmary, the Kidderminster Infirmary, and the Birmingham Skin and Lock Hospital. In 1880-81 he was President of the University Graduates' Club, Birmingham, and in 1883-84, President of the Birmingham and Midland Counties' Branch of the British Medical Association. In this last office he delivered as his Presidential Address some remarks on "The Political Powerlessness of the Medical Profession," an address that did much to rouse the profession to greater activity, and of which the first fruits were seen in the changes in the constitution of the British Medical Association, carried at the Liverpool meeting, and in the agitation for a reform in the constitution and government of the Royal College of Surgeons. Dr. Foster has, since 1872, been a member of the Executive Council of the British Medical Association, and has taken a leading part in its proceedings. In 1884 he was elected President of the Council of the British Medical Association, an office which placed him in the position of head of the Executive of an Association of some 12,000 Medical Practitioners. It was largely due to him that the present constitution of the British Medical Association was created, a constitution which makes the Council a Representative Body, elected annually by the Branches of the Association.

Dr. Foster has for very many years devoted his leisure moments to the study of political and social questions, especially to such as lie on the border land of medical science. In the pamphlet above referred to he had said:—"As a class we are too timid and too reticent: we fail to take our due share in the public work of the communities in which we live. The nature of our daily work is to many of us so absorbing in its interest, and demands so much of our time for calm, careful reflection, and for scientific investigation, that we turn, with the dislike of philosophers, from the noise and dust of the forum. With some of us, possibly, there may be a lurking fear that pronounced opinions on political and social questions are apt to injure a doctor in public estimation, and so to lessen his professional influence and his pecuniary profits. In the sad quietude of the sick chamber, where the finer issues of life and death have to be weighed, the brawling politician would jar on the sensitive nerves of the sufferer. Truly: but we need not be brawling politicians; nor need we allow political questions to so occupy our thoughts as to interfere with that absolute concentration of mind on the case of each patient, which is essential to the most perfect performance of our work. Every man needs some variety in the direction and subject of his thoughts; as a class we are apt from lack of this variety to become, as compared with other classes, rather narrow-minded, and wanting in sympathy with the great movements going on around us. Some of our greatest medical and surgical minds have found their recreation in a devotion of their leisure to scientific and artistic work outside the professional limits, and have won as it were a second fame. Why should not more of us find this recreation in patriotic service to the community? No slavish fear of consequences need check us, for if a calling like ours, which entails so much labour and so little reward, necessitated the mean servitude of reticence from prudential motives, it would justly sink from its position of respect as a free and learned profession. We cannot all of us take much share in either local or imperial politics, but some of us can; and those who can should be encouraged by the thought that, in town councils, local boards, and boards of guardians, there is plenty of work for them useful to the community and good for the profession. Year by year the statute book receives provisions of a social and sanitary nature that demand medical knowledge for their most effective administration. If we help in this, we act for the good of our fellow-citizens; but if, from too close a devotion to work, or from a selfish love of ease, or from a sorry fear of making enemies, we shrink from this duty, can we be surprised that the public estimate of us sinks, and our influence everywhere falls? In every town and in every district I would gladly see medical men taking their due share in the important and responsible work of local government."

At the general election of 1885, Dr. Foster was elected M.P. for Chester, by a majority of 300. This is the first instance of a physician in the largest consulting practice in his district making so great a sacrifice to enter upon a Parliamentary career.

Dr. Foster is a Liberal in politics, and is impressed by a desire to gain for his profession greater public recognition, and to advance its influence in sanitary and social legislation. This he believes can only be done by medical men taking a part in political life in all its grades. He was active in the House concerning the Medical Bill of 1886, and his speech on the second reading of it caused the Government to yield another direct representative of the profession on the Medical Council. He also amended the Bill in Committee, and gave valuable help in passing it through the House of Commons. At the General Election in 1886, Dr. Foster again stood for the City of Chester, and the contest was a most severe one. When the split in the Liberal Party occurred, prior to the rejection of Mr. Gladstone's Bills in Parliament, Dr. Foster had become chairman of the National Liberal Federation, and had taken an active share in directing that organization in favour of the Gladstonian policy. The contest at Chester became, therefore, one of great interest, and resulted in the defeat of Dr. Foster by the narrow majority of sixty-six, the local influence of the Duke of Westminster being thrown into the opposite scale. Undaunted by this reverse, he threw himself with more energy into the work of the National Liberal Federation, and has continued to act ever since as Chairman of the Council of that body.

When Mr. Gladstone resigned office, after the general election of 1886, the honour of knighthood was conferred upon Dr. Foster by the Queen, on Mr. Gladstone's recommendation, because of his distinguished position in his profession, and also for his general services to the country. At the Brighton meeting of the British Medical Association, held in August, 1886, the new knight was warmly congratulated on the honour done through him to the Association. Since the founder, Sir Charles Hastings, was knighted, no similar recognition had been given to any of his successors as Presidents of the Council, until this occasion.

The passing of the Medical Act gave the medical profession the right to elect three representatives for England on the General Medical Council. At Brighton the matter came up at the Association meeting, and privately a desire was expressed that Sir Walter Foster should be nominated. At a meeting afterwards held in Birmingham, it was determined to nominate him along with Mr. Wheelhouse and Dr. Glover. The contest excited a good deal of warmth in professional ranks, and Sir Walter Foster was elected by the splendid number of seven thousand seven hundred and eighteen votes, a majority of three thousand and fourteen over the highest unsuccessful candidate. At the Sessions of the Council since held, Sir Walter Foster has taken an active and useful part.

At the end of that year the Liberal working men of Chester presented him with a handsome testimonial and address, and the strongest desire was expressed that he should again contest the city. A vacancy, however, occurred in the Ilkeston Division of the County of Derby in March, and Sir Walter Foster was elected, although a perfect stranger to the people, by a large majority (one thousand three hundred and thirty-two). Since his return he has become an active member of the Opposition, specially interesting himself in all questions bearing on the well-being of the working classes, and he has not been unmindful of the medical department of the army and other subjects connected with his profession. Outside the House of Commons, his official position in connection with the Federation has necessitated great political activity, and he has become one of the recognized speakers of his party.

Through all this Sir Walter Foster has held closely to his profession, and still keeps up a large practice as a consultant in Birmingham. All through the Parliamentary Session he sees patients on three days a week, at least, in Birmingham, and frequently runs down at other times for special consultations. He rightly regards his active connection with the Profession as an element of strength to his position in the House as an authority on medical matters, and of importance to his medical brethren. It is hard work, but like many others, the subject of this sketch regards hard work as the secret of health and enjoyment.

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J. MILNER FOTHERGILL,

M.D.

THE well-known and voluminous author, John Milner Fothergill, was born on April 11th, 1841, at Morland, in Westmoreland. His father was a medical man; and from childhood he has been familiar with the details of practice. At the age of thirteen, while at Saint Bee's School, he was apprenticed to his father; and in the holidays became practically acquainted with medicine as an art and a craft, by learning to roll pills, brew tinctures, compound medicines, and the like. In 1859 he entered as a student at the University of Edinburgh, to learn something of medicine as a science. At first he gave no promise of that industry which has been so marked a feature of his later years. He passed creditably in 1865; having given two winters of his student-time to helping his father in practice.

Like many more men who have manifested originality, he was taken out of a well-worn groove by an accident. He affected no liking for his native village; and declared he would never practise in it. But the failure of his father's health just as he graduated, compelled him to enter the shafts there. After some months of illness, his father died; and young Fothergill was chained to his birth-place. His ways of thought were too much his own to give his relatives confidence in his future. He soon realized that if he was to get out of Morland it must be by his own efforts, as he could look for no help from his kith and kin. His father had been a diligent reader, and possessed an unusually good library; and in these books the son saw his only chance of deliverance. He read steadily and laboriously, while he took every pains over his practical work. He was no longer reading for an examination; he was working because he realized that knowledge was power. To this experience was due much of the originality he afterwards displayed in his writings. Later on, in 1867, he caught scarlet fever from a patient, and was so ill his life was despaired of. In later life he has always attributed his mental activity to the long delirium of that illness; and in convalescing therefrom he conceived the idea, and laid the keel of his future well-known work, "The Practitioner's Handbook of Treatment."

After this he worked harder than ever, and began to look about for a wider sphere of practice. This he found in the Senior Resident Medical Officership of the Leeds Public Dispensary. Here he had immense opportunities for seeing disease in its various forms from 1869 to 1871, of which it is needless to say he fully availed

Yours faithfully

J. Milner Fothergill

himself. In addition to the heavy duties of the post, he was invited to be Honorary Secretary of the Leeds Medical Society (now the Yorkshire Medico-Chirurgical Society). Further, he carried out a design formed at Morland, viz.: to compete for the Hastings Gold Medal of the British Medical Association. He chose for his subject "Digitalis: its Mode of Action and its Use," with which he gained the coveted prize in a very strong competition. It is to this essay, which contains a large amount of original research, that the profession as a body owe their acquaintance with foxglove; and their systematic treatment of morbid conditions of the heart, which before then was of a hap-hazard character. He was very much tempted to remain in Leeds, where successful practice awaited him; but he had made up his mind to adventure London.

He first visited Vienna, with its huge Hospital and Pathological Institute, where he was once more a student. His special work was carried on in connection with a book on which he was engaged—"The Heart and its Diseases, with their Treatment;" a work which he completed in Berlin. On his return to England (1872) he passed the examination for the Membership of the Royal College of Physicians of London, preparatory to starting as a consultant; trusting to his work on Disease of the Heart to bring him practice. His first appointment was that of Assistant Physician to the West London Hospital (1874), where he worked assiduously till 1881. In 1876 he was elected on the Staff of the City of London Hospital for Diseases of the Chest (Victoria Park), to which institution he is now Physician. During this time he paid repeated visits to the West Riding Asylum, at Wakefield, to familiarize himself with insanity; and contributed some notable papers to the *West Riding Asylum Reports*, edited by Sir J. Crichton Browne, F.R.S. He also became the London Correspondent of the *Philadelphia Medical Times*, a post he held till 1886. For some years he furnished the reports of the Pathological Society to the *British Medical Journal;* and contributed many leaders on Therapeutic subjects to its pages. The bulk of these were portions of his well-known work, "The Practitioner's Handbook of Treatment," published in 1876. This work met with a hearty reception on both sides of the Atlantic, and now has a world-wide reputation. "In it is to be found a systematic study of the best means of attacking disease according to our most recent lights. Not that Dr. Milner Fothergill is enamoured of the present; indeed, his respect for the past is such that he has long been charged with being a *laudator temporis acti.* In it the reader will find the practice of the past united to the knowledge of the present, so as to weld all into a comprehensive scheme of treatment, rational yet teeming with empirical lore." Such was the verdict of one reviewer out of many. Many and warm were the thanks the author received from the numerous readers of this work.

He also engaged on a series of experiments conducted for the British Medical Association, as to the antagonism of various lethal agents, which are also potent medicines. The practical outcomes of his labours were the antagonistic effects of belladonna and strychnia to aconite upon the respiratory centre; for if belladonna or strychnia were administered within a given time, this action was antagonized, and the breathing restored. This experience opened up a new vista in clinical medicine by supplying a respiratory stimulant whenever the respiration was embarrassed. On the 14th of February, 1878, an opportunity offered itself for testing the value of these experiments on the human body. A woman was carried to the West London Hospital suffering from opium-poisoning. When Dr. Milner Fothergill arrived there, she was actually dying, despite all that had been done for her. He had long ago made up his mind what to do in such a case should it ever offer itself; and at once had a grain of atropine injected under the woman's skin. It was the first time in human history when a lethal dose of poison was deliberately given to a human being with other than homicidal intent. The patient was then put to bed, and, after a few hours of anxious suspense as to what might happen, came round. Every symptom of danger indeed passed away before she emerged from her opium-sleep. The case created great interest at the time; but has not exercised that influence upon the treatment of opium-poisoning which might have been expected from it.

A month later Dr. Milner Fothergill gained what had long been the object of his desires—viz., the Fothergillian Gold Medal of the Medical Society of London. By securing this he occupied the unique position of being the sole holder of the two great Gold Medals of Medicine. His subject was: "The Antagonism of Remedial Agents," and the essay contained the results of his experimental enquiries. In this he showed the action of remedial agents upon the centres of the circulation and the respiration; and pointed out how they could be utilized in practical medicine when either centre was embarrassed. In his Hastings Prize Essay he pointed out how we could increase the energy of the cardiac contractions when inefficient; in his Fothergillian Prize Essay he demonstrated our power to stimulate the respiration—two most important additions to our means of combating disease and death.

His writings and work were now winning fame for the ambitious North-countryman, and he was soon after this elected a Foreign Associate Fellow of the College of Physicians of Philadelphia; the number being limited to twenty. Later on, in 1882, he was made an Honorary M.D. of Rush College, Chicago, Illinois—both recognitions of the esteem in which his works are held in the United States of America, where they find myriads of readers. His clinical work had, during these years, taught him the cardinal importance of nutrition in the fight with disease. His first work was a cookery-book, entitled: "Food for the Invalid, the Convalescent, the Dyspeptic, and the Gouty," a work which came out in 1880, and ere long went through a large edition; telling of its acceptability to the outside world. The opening for some systematic treatise dealing with digestion and assimilation, and their derangements, dawned upon him. The idea took practical shape in a little time in the form of a treatise on "Indigestion, Biliousness, and Gout." Part I., "Indigestion and Biliousness," saw light in 1881; while Part II., "Gout in its Protean Aspects," followed in 1883. The first appeared at great length in one of the medical journals of Vienna; and subsequently took the form of a small book, telling of the estimate the Teutons put upon the work. The effect of this work was to add a chapter on "The Gouty Heart" to the second edition of his Heart-book, which appeared in 1879; a new and very important addition to the subject of the causation of diseases in the heart. The treatise on "Indigestion and Biliousness" begins with an account of the normal digestion, and proceeds to trace the cause of indigestion in the primary conditions resulting from bad teeth, bad cooking, and gastric catarrh; as well as from imperfect solvent action of the saliva, gastric juice, pancreatic solution, and from the secondary condition of the faulty action of the liver. The physiology of the organ is gone into at some length; and a large part of the book is occupied with excellent precepts for the remedy of the disease. The Essay on "Gout in its Protean Aspects" starts out with the proposition that there are three factors in the genesis of gout—impairment of the liver, by which an excess of uric acid is formed, incapacity of the kidneys to excrete the acid, and defective oxidation. We have then a very full account of the pathological changes wrought by gout, and of the diagnosis and prognosis of the disease; the text being that "gout means blood poisoned with uric acid," whereby the whole system is affected. The causes of the disease are then traced, and Dr. Milner Fothergill shows his large practical experience in his account of the proper treatment to be adopted. The larger experience brought to him as the outcome of the study of mal-assimilation led him further afield in the matter of food and feeding; and a later work is a "Manual of Dietetics," published by William Wood and Co., of New York, which it is believed will do much to make dietetics a part of medical education in the United States of America, where the matter is in a much more forward state than in Great Britain.

While thus working for his own objects and interests, as well as the good of sick persons, he did not forget others. His "Maintenance of Health" met with a very gratifying reception at the hands of reviewers, and took a good position as a guide to the avoidance of disease. The London School Board have accepted his "Animal Physiology for Schools,"—the story of the body and its structures, with their functions, in simple language. Three of the Student's Aid Series are by him: "Semeiology," "What to Ask," and "Rational Therapeutics"—useful books for students. Beyond this, Dr. Milner Fothergill has been a contributor to the *Contemporary Review* and *Good Words*. To the former he contributed in May, 1884, a remarkable article on "The Logic of Pain." "We are apt to regard pain as too exclusively an evil, and an unmitigated evil," he says. "Yet the question may be asked, is pain an unmitigated evil? has not pain other aspects, other sides to it? Is the pain of disease, or of an injury, not often highly, indeed eminently, useful?" Excepting certain kinds of pain, such as that proceeding from cancerous growths, Dr. Milner Fothergill proceeds to show what are the services of pain as a guardian of the tissues of the body. "Pain is the protector of the voiceless tissues; it tells us to desist from efforts when they are becoming injurious; it teaches us to avoid what is destructive to the tissues; it compels us to rest injured parts, and so to permit of their repair." Of these services instances are given as the effect of a foreign body on the eye of the horse bringing into play the *membrana nictitans*, which it swept away; in the pain of sprained joints and broken bones, which necessitates rest; and in many other ways. Again, pain is often the cause of unhealthy conditions being relieved or remedied by medical art; as in neuralgia, headache, dyspepsia, and muscular exhaustion. One of his contributions to *Good Words* was the life of an old fellow-student, "Diana Smith" (1880), who had left behind him a record of one of the most interesting and thrilling stories of Arctic experiences. His contributions to medical journals on both sides of the Atlantic are numerous; while as an anonymous writer he has written much,—the authorship of which is never suspected. The medical profession, indeed, has learnt much from him without knowing to whom it has been indebted.

His later works are "Chronic Bronchitis: its Forms and Treatment" (1882), and "The Physiological Factor in Diagnosis" (1883), which went through an edition of one thousand in three months. This pleasant, and genial book was intended by Dr. Milner Fothergill to help those young practitioners who have just left the schools, and find themselves face to face with the actual difficulties of practice. He teaches them the plain principles on which they should act in their dealings with patients, and the questions which should be put as to family and individual history. He then deals with the physiological conditions which give indication of disease—the external appearances, diathesis, cachexia, and expression; the tongue, respiration, pulse, temperature, etc.; and the sensations of the patient, such as shortness of breath syncope, palpitation, pain, sleep, and appetite. The book concludes with a very admirable chapter as to the manner of the doctor in the sick-room. Believing this to be his last contribution to medical literature, in the conclusion he took a formal farewell of his readers. But he was mistaken; and found the laying aside the pen a harder task than he anticipated; and no one was surprised when, a little later, "The Diseases of Sedentary and Advanced Life" appeared (1885). This little book is one that non-medical people may read with profit. There will be found an account of those diseases which attack literary men, clerks, governesses, students, and such as are worried by the world ; and the liver, the heart, the kidneys, and other organs are treated of fully ; as are also the affections and failings of the aged and infirm. Later still, he issued "Vasorenal Change *versus* Bright's Disease : or sixty years further study of the morbid process first observed by Dr. Richard Bright, F.R.S." In this monograph he shows (1) the reversion of the liver to the early uric acid formation of the bird and reptile ; (2) the march of the malady along lines mapped out by the three primitive layers of the embryo, according to the diathesis and temperament of the individual (the "Norse" and "Arab" type) ; (3) the various diseases which lie along its course ; and (4) the fatty degeneration of the heart, which is the last act of the long pathological drama—a work which promises to make considerable alterations in medical text-books. Its outcomes were three lectures on "The Modern Tendency of Disease," which have assumed a permanent form ; and a paper read before the British Association for the Advancement of Science (Manchester, 1887), on "The Effects of Town Life upon the Human Body," in which he pointed out that the town populations show a tendency to revert to an earlier and lowlier ethnic form (Celto-Iberian) : and, from failure of the digestive organs, die of phthisis and Bright's disease —a paper which excited the widest attention.

Dr. Milner Fothergill's two striking personal characteristics may be said to be individuality, and originality. These are, doubtless, the outcome of his early experience in the self-education of village practice. Industry, too, is a marked feature in him. Like his kinsman, Dr. Burn, the author of the famous "Justice," he is a keen worker. It is a curious fact that one of the arm-chairs in which Dr. Burn wrote his well-known legal treatises in the eighteenth century, should have been the seat from which another well-known writer has issued comprehensive treatises in the nineteenth century. After a monotonous existence for over one hundred years the old mahogany arm-chair entered upon a second sphere of usefulness.

One writer thus pleasantly discourses on Dr. Milner Fothergill's characteristics as a medical *litterateur :* "Dr. Milner Fothergill has some fixed ideas which he is always leading you round and round, and showing from different points of view. This causes a considerable amount of repetition in his books ; but the value, in an educational point of view, of inculcating leading ideas, far more than compensates for the incident evil. To enumerate some of the centre thoughts of his books—'Sound physiology must be the basis of sound practice'—a fact long recognised in Scotland, where physiology has always been taught as 'The Institutes of Medicine.' 'Nitrogenous waste in the blood is the root of many evils.' 'Treat your heart as you would your horse : when the roads are heavy feed it well, else you many have a breakdown in a dark night on a miry road.' 'In lung disease death comes through want of air, therefore beware of opium.' 'In painful abdominal diseases death comes through nervous shock, therefore hold on by opium.' 'Above all, beware of looking at a sign-post instead of looking at the road. If you find sugar or albumen in the urine, do not bolt off with the idea that your patient is fatally ill of diabetes, or Bright's disease—that is to look at a naked post and see nothing at either side. Study your *patient*, not merely his *malady*.' Then Dr. Milner Fothergill is not a town-bred consultant. He has compounded his own medicines, and set broken legs, and been man-midwife, and ridden late and early, and chaffed the old women at the cottage doors ; and we doubt not knows a good horse when he sees it ; and, in short, has been a general man-of-all-work, as every good doctor ought to be." But Dr. Milner Fothergill, with his facile pen, seems equally at home in a hand-book of general utility, a treatise on a special subject, a prize essay, or a handy manual. Indeed, he has invaded the realm of fiction ; and though hardly so successful therein as in other fields, his novel, "Gaythorn Hall" (1885), is a vivid picture of the stormy Chartist time of 1837-42, and possesses a distinct historical value. His creations show a keen eye for character ; and it is said there are other works of a non-medical nature in MS., in a big oak chest, at 3, Henrietta Street, W. His little work, "The Will Power: its Range in Action," renders such a view probable ; and further reveals the fact that Dr. Milner Fothergill has read widely and carefully in other than medical literature. All his writings tell that he is in the habit of thinking for himself. Descended from old Norse families, both on the Milner and Fothergill side (who have since the days of King John lived side by side in Raven stonedale, a high-lying dale on the Yorkshire borders of Westmoreland), his massive physique is no less characteristic than his mental sturdiness ; while his fearless independence, his outspoken speech and frank manners, tell of his descent from the statesmen of the north. No personal consideration ever prevented him from standing up for a friend, or—still more—striking a blow at an enemy. Perhaps this hardihood of character runs to excess in his asserted tendencies to iconoclasm and "speaking evil of dignities." His style is vigorous and attractive, so that his works are eminently readable as well as practical. Indeed, it may be said of him, literally and metaphorically, he is "a man of weight in his profession."

A list is appended of his more important works.

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SIR WILLIAM WITHEY GULL, Bart.,

M.D., F.R.C.P., D.C.L., LL.D., F.R.S.

SIR WILLIAM WITHEY GULL, the eminent Clinical Physician, is the youngest son of the late Mr. John Gull, of Thorpe-le-Soken, Essex, and was born at that place on December 31st, 1816. He was educated at a private school in the village, and subsequently pursued his medical studies at Guy's Hospital, residing in or near the hospital for the space of fifteen years; and, with the exception of a short break, he has been connected with that institution ever since. He graduated as M.B. in 1841, and M.D. in 1846, at the London University; and it is worthy of note that Dr. Gull, for Medicine, and Mr. Frederick John Wood, for Arts, were, in 1856, elected by the Graduates' Committee for nomination to the Crown as their first representatives in the Senate for that University. After taking his Bachelor's degree, in 1841, he was medical tutor for two years to men preparing for the University of London, and amongst others who worked with him were, of his after colleagues, Dr. Wilks, Dr. Habershon, and Dr. Braxton Hicks. In 1843 he undertook a lectureship in Natural Philosophy at Guy's, and lectured on Comparative Anatomy and Physiology there—a new course—in 1846. He was then invited by the Council of the Royal Institution to deliver the Fullerian Lectures, and was Fullerian Professor of Physiology at the Royal Institution of Great Britain from 1847 to 1849. Faraday was then Fullerian Professor of Chemistry, and this association ripened into a friendship, which continued until Faraday's death, in 1867. Dr. Gull was elected a Fellow of the Royal College of Physicians in 1848, has several times filled the office of Censor of the College, and was a member of the Council in 1863-4. For twenty years he acted as Physician and Lecturer to Guy's Hospital, retiring from that position about 1867, though he resumed his connection with the institution in 1871 by accepting the post of Consulting Physician, which he still holds.

The circumstances which gave Dr. Gull an opportunity for residing so long at Guy's Hospital arose out of the legislation respecting lunatic asylums. There had been established by Guy himself, within the precincts of the hospital, an asylum where twenty female lunatics should be received for life. About the year 1843, it became necessary that every such institution should have a medical superintendent, and this office was given at Guy's to Dr. Gull. At that time Dr. Conolly was developing the "non-restraint system" at Hanwell, which has since exercised such an influence

Yours faithfully
William W Gull

over the treatment of the insane; and arrangements were made for a class of students selected from the Metropolitan Hospital to visit the asylum from week to week, when he explained the method of his treatment to them. Dr. Gull often went at such times from Guy's, and he formed a long and close friendship with Dr. Conolly. Sir James Clark, in his life of that eminent man, gives the following quotation from a letter of Dr. Gull's, who writes thus of his experiences at Hanwell:—

"I cannot express to you the charm we all felt in these visits. The asylum in the country, apart from the noise and bustle of the town; the novelty of the clinical work and teaching; the new field of facts before us, contrasted with those afforded in the routine of our other hospitals; the feeling of the peculiar advantages thus enjoyed, all combined to make us eager and thankful. I have often regretted that such great opportunities have been since neglected, and that, year by year, these larger fields of knowledge have been lying waste and barren. If by any word you could awaken the minds of those who govern and direct these institutions, so that they might make them available for medical instruction after the manner inaugurated by Dr. Conolly, you would indeed prove a benefactor to us all. It is lamentable to think what ignorance yet prevails in and out of our profession on the subject of insanity. So it will be whilst the matter remains a special study. The prejudice was too strong even for Dr. Conolly. He set a bright example, but the difficulties were too great for him. I should, indeed, be glad to think that others should in long succession enjoy such opportunities as we had at Hanwell. I can also satisfactorily answer your inquiry respecting the effects of our visits upon the inmates of the asylum. To the great majority it was a matter of indifference or of some interest, and to others it seemed to give pleasure. Generally the visit round the wards was with as little inconvenience to the patients as it would have been in the wards of a hospital for general diseases."

Dr. Gull's prolonged residence in Guy's Hospital, from the circumstances named, enabled him, with the Hanwell experience, so to improve the condition of these supposed helpless lunatics, that they were considered fit to be sent to their several homes, and the wards they occupied were converted into the present clinical wards. During this time Dr. Gull had been made assistant Physician to the Hospital, and he subsequently became full Physician, as is stated above. He likewise held a Lectureship in Medicine there from 1856 to 1867, and his teaching and example were of the greatest use and encouragement to the students at Guy's.

The remark quoted above from Dr. Gull's letter as to the evils of specialism will illustrate his views on the question, which, however, he has elsewhere enforced. In the year 1861, in an oration to the Hunterian Society, he put pointedly the very pregnant inquiry, "Who can treat as a specialty the derangements and diseases of the stomach, while its relations and sympathies are so universal? How can there be a special 'brain doctor,' whilst the functions of the brain are so dependent upon parts the most distant, and influences the most various? A tumour in the brain may tell of its presence only through disturbance in the stomach; and a disorder of the stomach and its appendages may have for its most prominent symptoms only various disturbances of the brain." As a matter of fact Sir William Gull has never attached himself to any specialty in study or practice, and will be remembered as one of our greatest clinical physicians. He has recognized, as he expresses it, that "with the highest duties which science imposes, there are the various claims of humanity, augmented by suffering and charged with every disturbing element that weighs upon the heart of man; but, at the same time, for us (the *Medici* or curers of disease) with every high and quickening motive." In this view, Medicine, with Dr. Gull, transcends any specialism, given solely to the investigation of particular morbid conditions, and is a wide and all-embracing science, a link in the great chain of biological investigation. "Some have prophesied," he says, "that the advancement of the biological sciences will leave medicine a barren waste in their midst; but such a result, in the natural course of things, cannot happen." Of his own field of work, he thus spoke in an address at the International Medical Congress in 1881, "Clinical medicine, of itself, affords opportunities for the study of pathology, which are, in some respects at least, unique. Through it, and through it alone, we become acquainted with the first deviations from normal function. From such early beginnings we may trace the development of pathological processes, until the organism is finally, and in different ways, overwhelmed by them. I need only suggest those chronic lesions which spring up from conditions *ab intra.* In the latter stages of these degenerative processes, we are apt, without their history, to be so impressed with the more prominent mechanical results, that these would seem to us the original and essential conditions; as, to the Nile-worshipper, the river is a power in itself." He considers it well for clinical medicine that its times of investigations are intimately interwoven with more scientific departments, because it saves its professors from "the dangers of separatism," and their colleagues from "those of Pharisaism," because it quickens their observations where they might otherwise be thought insignificant. The Clinical Physician, Dr. Gull says, can advance the solution of some of the more difficult problems of our condition by critical and exact records. To him every fact has its value, "though it may be of a different order to the phenomena of gravitation." "A tone of the voice, the play of the features, the outline and carriage of the body, are to him as invariably related to the central conditions which they reveal, as are the grosser facts of Nature."

Though Dr. Gull has long been occupied in the field of medicine, and is habituated to the work of hospitals, he is an ardent advocate of the claims of preventive medicine, believing even that the office of the physician as a curer of disease will yet cease to be. "The duty which lies nearest to us," he says, "must ever have the first claim; and it cannot but be admitted that the nearest duty each man has to his fellow is to save him, as far as possible, from all injury, even though that injury may arise as the consequence of his own fault. Nor will it be questioned that the cause of morality is more advanced by beneficent interference than by permitting ourselves to stand passively by whilst intemperance and vice work ruin, and infect the very fountain of life." Again, he remarks: "To know and counteract the causes of disease before they become effective, is evidently the triumph of our art; but it will be long before mankind will be wise enough to accept the aid we could give them in this direction. Ignorance of the laws of health, and intemperance of all kinds, are too powerful for us." Sir William Gull considers drunkenness to be the most destructive agent we are aware of in this country, a fruitful source of disease; and the general use of alcohol, he says, is scarcely less dangerous. He believes that the constant use of it, even in moderation, may injure the nerve-tissues, and be deleterious to health, and that it is a common thing for people to be injured by drink without knowing it. The train of disorders, he says, arising from excess, begins with the liver and the blood, and proceeds to the lungs, heart, brain, and kidneys, the stomach often lasting out longer than all. For the cure of habitual drunkards he would use somewhat drastic measures. They should be forbidden the use of alcohol altogether, and this, he believes, would not injure them. Neither should they have any tonics or drinks to accustom themselves to the gradual disuse of it, for good food will ultimately enable them to overcome the craving. With regard to the use of alcohol in medicine, Sir William Gull is disposed to believe that it is over-prescribed. It is useful under the shock of an injury or an operation, as a sedative to deaden the nervous system, and its principal use is as a sedative—the best sedative, indeed, that we possess in such cases as the delirium of typhoid, where the use of opium would probably be fatal. In general, Sir William believes that diseases run for the most part a physiological course, and that alcohol has but a subordinate value in their treatment. His whole views on the "Advantages and Disadvantages of Alcohol" were given before the Select Committee of the House of Lords on Intemperance, in 1877, and an admirable *précis* of them by Dr. Bucknill will be found in the *Contemporary Review* of December, 1878.

Few Clinical Physicians have been more popular with the public, or have had better opportunities of doing useful work, than Dr. Gull, in the course of his active and busy life. At the close of the year 1871, during the severe attack of fever from which the Prince of Wales suffered after his visit to Londesborough Lodge, near Scarborough, he rendered such valuable services, in conjunction with Sir William Jenner, that a baronetcy was conferred upon him shortly afterwards, and he was made a Physician Extraordinary to the Queen in the February of 1872. At the same time Her Majesty granted to him, as an augmentation of his family arms, a canton, heraldically blazoned thus: "Ermine; an ostrich feather in pale, argent; quilled, or; enfiled by the coronet which encircles the plume of the Prince of Wales, tinctured of the last."

In 1880, on the occasion of the extraordinary denunciation of the medical staff, and of the students and nurses of Guy's Hospital, which Miss Margaret Lonsdale published in the *Nineteenth Century* in the April of that year, Sir William Gull took up his pen, and wrote a vigorous reply in the succeeding number of that journal. He refuted, from his personal knowledge, the charges made as to the moral character of the old nurses, answered the accusations against the medical staff and students, and pointed out the weakness of such a statement as that the "doctor is no more necessarily a judge of the details of nursing than a nurse is acquainted with the properties and the details of administration of drugs," or that nurses should be allowed to exclude the students, except at certain times, from the wards.

When the International Medical Congress met in London in 1881, Sir William Gull was President of the Section of Medicine, and in his Inaugural Address, which is referred to above, he reviewed the relationship of Medicine to the Biological Sciences and the advancement of knowledge. He referred to the reassertion of "Solidism" in the science of living things, as a result of the progress of knowledge, and to its position in modern Medicine as a theory of organic processes, which he illustrated in many ways. During the Congress he took part in many of the discussions, and, in conjunction with Dr. H. G. Sutton, presented a paper on the "Relation of Renal Diseases to Disturbances of the General Circulation and to Alterations of the Heart and Blood Vessels," which attracted much attention.

Sir William Gull's views on the question of vivisection were expressed in the *Nineteenth Century* in 1882, and the following short extract will explain the general tenor of them:—"There is no doubt that physiological experiments are useful, useful for animals as well as for man. They are therefore justifiable. . . . Nothing is so cruel as ignorance. For how many centuries had human sufferers to bear pain which is now preventable by better knowledge? How many thousands festered to death in small-pox before the discovery of vaccination? How many are now dying of tubercle and scrofula whom a better knowledge of their conditions might rescue? Yet the pursuit of this knowledge is hindered in England by the outcry of cruelty—the cruelty being no more than the inoculation of some of the lower animals with tubercular and scrofulous matter, in order to study the course of the disease and the modes of prevention. The cruelty obviously lies, not in performing these experiments, but in the hindering of progressive knowledge."

In 1883 Sir William Gull resigned the position which, for twelve years, he had held on the General Medical Council as one of the Crown members. He has been President of the Clinical Society, and is a Fellow of the Royal Medico-Chirurgical Society, an hon. D.C.L. of Oxford (1868), Fellow of the Royal Society (1869), and LL.D. of Cambridge University (1880), and of Edinburgh (1884). He has contributed largely to medical literature, and several of his treatises are of great value, notably the "Gulstonian Lectures on Paralysis," and the "Report on Epidemic Cholera," drawn up at the desire of the Cholera Committee of the Royal College of Physicians, in conjunction with Dr. William Baly, in 1854. Sir William's Harveian oration to the Royal College of Physicians in 1870, wherein he propounded his "Theory of Vitality," called forth a remarkable reply, entitled the "Mystery of Life."

Sir William Gull married Susan Anne, daughter of Colonel J. Dacre Lacy, of Carlisle, and has issue, one son and one daughter, living.

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Very truly yours
George Barley.

GEORGE HARLEY,

M.D., F.R.C.P., F.R.S.

DR. GEORGE HARLEY was born at Haddington, in East Lothian, on the 12th of February, 1829, and may be said to be the offspring of aged parents, seeing that he was not born until his father, George Barclay Harley, had reached the age of sixty-three, and his mother forty, and he was the last child and only son of the family.

Like many generations of his ancestors, Dr. George Harley was educated at the Haddington Burg Schools, then under the rectorship of Dr. Gunn. At the age of seventeen he matriculated as a medical student at the University of Edinburgh, and graduated in 1850. Before his graduation he brought himself into professional notoriety, while acting as House Surgeon to the Maternity Hospital, by having, on a sudden emergency, single handed and without any preparation, successfully extracted by the Cæsarean Section (after the death of the mother from heart disease), a living child at the seventh and a half month, now grown up to be a man and the father of a family. The case was read by Professor (afterwards Sir James Y.) Simpson, to the Medico-Chirurgical Society, and published in the *Edinburgh Journal of Medical Science*, of July, 1850.

After graduating, Dr. George Harley acted as Resident Surgeon, and subsequently as Resident Physician, to the Royal Infirmary. After which invaluable training he went to Paris, and there began his scientific studies in the Physiological and Chemical Laboratories of Robin, Verdeil, and Würtz. While working there he made several important researches, as is recorded in the large work of Robin and Verdeil, entitled "Chimie Anatomique." The most notable was his finding that iron is a constant constituent of healthy urine, and that the sherry colour of normal human urine is due to the presence in it of the effete colouring matter of the blood ; to this substance he consequently gave the appropriate name of "urohæmatin." The latter discovery, which was published separately in the *Pharmaceutical Journal* of 1852, attracted the attention of Professor Scherer, of Würtzburg—an authority on urine pigments—who, in Schmidt's *Jahresbericht* of the following year, called in question the views of the young physiologist, a circumstance which, as we shall presently see, lead to important results in his future career. After working twelve months in Verdeil and Würtz's chemical laboratory, Dr. Harley proceeded to the Physiological Laboratory of the College of

France, which, when he entered it, was under the superintendence of the renowned Magendie. Magendie, however, within a couple of months, retired, and his place was taken by Claude Bernard, whose researches on the influence of the liver in the production of diabetes led Dr. George Harley to conceive the idea that it might be possible so directly to stimulate the nerves of the liver as to cause it to manufacture such an excess of sugar as would suffice to produce diabetes. Failing to meet with encouragement from Professor Bernard, he determined to experiment on the subject at his lodgings. Having fitted up a small laboratory, and a sufficiency of dogs for the research being provided, he, with the aid of one or two of his fellow-students, notably Dr. John Bowman, soon had the satisfaction of demonstrating that, by the injection of stimulating liquids, such as alcohol, aqua ammonia, sulphuric ether, and chloroform, into the portal circulation, a true diabetes could be established in animals. More than that, he even found that he could render himself diabetic, through simply disordering his digestion by living for three days entirely on asparagus, rendered stimulating by pepper and vinegar. In fact, so successful was he in doing this, that, when he demonstrated his researches at the College of France, before the Commission appointed by the Société de Biologie to report upon them, he made himself so diabetic that his urine contained sugar for fourteen days, and we need scarcely say that he never ventured to repeat the experiment. The paper alluded to will be found in the *Comptes Rendus de la Société de Biologie de Paris*, 1853.

In 1853 Dr. George Harley was elected Annual President of the Parisian Medical Society; and many of those who were present at its anniversary dinner will still remember the sad and curious coincidence that happened on that occasion, when the distinguished Orfila, in proposing Dr. Harley's health, stated that, although he had never before taken part in any of the Society's dinners, the pleasing experience of that night would in future never allow him to lose an opportunity of being present at its annual reunions. On leaving the house, he had to walk a short distance in the rain to his carriage, and, unfortunately, through having thin boots on, he was during the night seized with fatal inflammation of the lungs, and on that very day fortnight the whole of the fifty gentlemen who had dined with him attended the great public funeral bestowed upon him by the State. After two years' residence in Paris, during which time he was almost entirely occupied with physiological researches, Dr. Harley bent his steps towards Germany, at that time in its zenith as an educational centre—for Physiological Chemistry under Liebig, Histology under Kölliker, and Pathology under Virchow, all of which branches of scientific knowledge he was anxious to learn as much of as possible; so he spent other two years at the Universities of Würzburg, Giessen, Berlin, Vienna, and Heidelberg. It has already been said that Professor Scherer had called in question Dr. George Harley's statements regarding the nature of the colouring matter of the urine, and the normal existence of iron in it. This led to his betaking himself direct to Würzburg, and entering himself as a student in Scherer's laboratory. Nothing could have been more fortunate than this course; for, not only did he soon convince Professor Scherer that he was right in every one of his statements, but, before leaving Würzburg, he communicated his research to the Academy, and Scherer not only publicly complimented Dr. Harley on it, but requested the Academy to confer upon him the honour of its corresponding membership, which it readily did. During the time Dr. Harley remained at Würzburg, he worked in the laboratories of both Kölliker and Virchow, and thus laid the foundations of the histological knowledge which afterwards, in 1855, obtained for him the Lectureship of Practical Physiology and Histology at University College, London.

While working in Germany Dr. George Harley published two scientific memoirs, one entitled "Urohämatin und seine verbindung mit anamalischem Harze," and another on the "Harns und Blutes einer an Hydrops und Albuminurie leidenden Schwangern," in conjunction with Dr. Gegenbaur. This last-named paper still furnishes the most complete analysis of the urine and blood in a case of albuminuria. While at Heidelberg Dr. George Harley was almost entirely occupied in the laboratory of Professor Bunsen in acquiring a knowledge of the then-considered intricate subject of gas analysis. The time, however, was well spent, for it enabled him, after his return to England, to make a most elaborate series of researches on the Chemistry of Respiration, only a small part of which has ever been published, and that part was communicated to the Royal Society in 1864. The publication of this paper in the *Philosophical Transactions* saved its author £20 out of the £70 then required (1865) to be paid on attaining the honour of the Fellowship of the Royal Society, while it likewise obtained for him a pecuniary grant of £50 for the research.

After quitting Germany, Dr. George Harley proceeded to Italy, but he had scarcely been many days at the University of Padua before he discovered that he could learn nothing of scientific medicine in that then backward Italian School, so he returned to England at the end of 1855. He then came to London, and, within five days of his arrival, he was made Curator of the Anatomical Museum, at University College, and received an intimation that the reception of the testimonials for a Lectureship on Practical Physiology and Histology, then vacant, was, by order of the Council, postponed on his account for three months.

In due course of time Dr. Harley was appointed to the vacant Lectureship, and from that day his rise in the School was rapid; for in 1859 we find him appointed to the Professorship of Medical Jurisprudence, and soon afterwards he was made Physician to University College Hospital. After becoming attached to University College Medical School, he published, in the *Proceedings* of the Royal Society, a paper "On the Oxygen in the Blood," which overturned the previously generally-accepted doctrine of Magnus, that the respired oxygen entered into no chemical combination with the constituents of the blood, but formed with them merely a physical mixture. He showed, indeed, that precisely the reverse was the case. Immediately after the great trial of Dr. Palmer, for poisoning his friend Cooke with strychnia, in 1856, and at a time when little was known regarding the toxic effects of that substance, beyond that it induced tetanic convulsions, Dr. George Harley published a series of papers which threw considerable light on the physiological action of strychnia on the animal body. These papers are referred to in the appended bibliography. In these articles he showed that the poison acts in precisely the same way, though with different degrees of rapidity, however introduced, and that, notwithstanding that it is called a nerve-poison, it has no direct action on the nervous system whatever, but only affects it through the intermediary of the circulation He found, experimentally, that the tetanising action of strychnia on the nerves is entirely due to the chemical changes it produces in the constituents of the blood. Moreover, he showed that strychnia operates most quickly when introduced into a vein near to the heart. He was the first also to demonstrate that strychnia and wourali (arrow-poison) have the property of reciprocally neutralizing the toxic effects of one another; so that an animal poisoned by one may be cured by the administration of a hypodermic dose of the other, when too large a quantity has not been taken.

The year 1856 appears to have been for Dr. Harley one of hard work, for in it, besides literary production, he was occupied with researches on the Anatomy and Physiology of the Supra-renal Bodies (for which he ultimately obtained the Triennial prize of fifty guineas from the Royal College of Surgeons of England). He likewise communicated to the Zoological Society an interesting paper on the Anatomy of a New Species of Pentastoma, which he had found in the Lung and Air-sac of an Egyptian Cobra. In 1856 Dr. Harley made his *début* as a contributor and speaker at the Metropolitan Medical Societies, and started in practice, with a plate on his door, in Nottingham Place. But, at the end of twelve months, having had only two patients, and having received from them but a few pounds, he thought it better to remove the door-plate until he had made a sufficient reputation to lead people to consult him. Consulting practice came to him sooner than he expected, and from a quarter little anticipated. The first medical man who did him the honour of calling him to a case was no less a celebrity than the late Sir Thomas (then Dr.) Watson. In December, 1856, Dr. Harley had shown, at the Pathological Society, of which Dr. Watson was then President, a large encysted hepatic-intestinal calculus (weighing 450 grains), and had explained how he thought it got into the duodenum by ulceration direct from the gall-bladder. The theory given, being not only perfectly new to

Dr. Watson, but appearing both reasonable and ingenious, led him, as he afterwards said, to put his "mark upon the young man," and from that time until he gave up practice, he repeatedly consulted with Dr. Harley, not only in liver, but also in renal cases. This may be said to have led to Dr. George Harley's subsequent success as a consulting physician. It should be remembered that Dr. Harley was amongst the few men in London who, at that time, besides being intimately acquainted with the use of the microscope, had enjoyed a thorough training both as an experimental physiologist, and pathological chemist, so that he supplied a want which men like Dr. Watson felt.

In 1858, immediately after he had been elected a Fellow of the Chemical Society, his career was nearly brought to an untimely close, by his taking, by way of experiment, between three and four drops of pure nitro-glycerine. Its effect was first to send up the pulse to one hundred and thirty, then to reduce it to less than forty per minute; at the same time it gradually paralyzed him from the feet upwards, without, however, in the slightest degree affecting his consciousness. After the administration of ammonia and brandy, the alarming effects passed off in about one-and-a-half hours. This accident happened a couple of days after a paper on the effects of nitro-glycerine had appeared from his pen in the *Medical Times and Gazette*, of April, 1858. In the *Lancet*, during the same year, he published articles on "The Histology of the Supra-Renal Capsules," organs which at that time were attracting a great deal of attention, on account of it being imagined that, when they were diseased in the human subject, the skin of the sufferer became of a bronze tint. At the meeting of the British Association for the Advancement of Science, held at Leeds in that year, Dr. George Harley communicated a paper entitled "Notes of Experiments on Digestion," which attracted attention, on account of his showing that pure pancreatine unites in itself the digestive functions of the salivary, gastric, and biliary secretions. This discovery of these compound effects of pure pancreatine had much to do with the subsequent employment of pancreatic emulsion as an artificial digestive agent; though it is only now (1887), that the suggestion of employing pure pancreatine as an artificial digestive agent is actually being put in force.

In 1859, Dr. George Harley was appointed Professor of Medical Jurisprudence in University College, London, and took No. 25, Harley Street (then numbered 77), where he has remained ever since. In the year following, in the *British and Foreign Medico-Chirurgical Review*, appeared an original article on "The Chemistry of Digestion," in which Professor Harley showed, by the result of experiment, that the reason why the living stomach is not itself digested is because it is protected from the solvent action of its own gastric juice by a layer of alkaline mucus, which is as rapidly replaced as it is removed during the digestive process. About the same time he communicated to the Royal Society a valuable paper "On the Saccharine Function of the Liver." To the Pathological Society Professor Harley showed at this time specimens and microscopic drawings of a peculiar and unusual disease of the osseous tissue in the horse, resembling in many respects mollites ossium and osteoporosis in the human subject; and, in 1861, a uterus and its appendages at the outbreak of the catamenia, in a woman who committed suicide just as her menses were on the point of appearing. In 1861, at the request of his friend, the late Frank Buckland, Dr. George Harley published in *The Field* a most interesting paper, entitled "A Dead Heart Pulsating," in which he showed how the physiologist has the power of producing the wonderful sight of a dead heart in a living body, by means of antiar (the arrow poison of the Bornese), as well as a living heart in a dead body, by means of wourali poison (the arrow poison of the Guianese).

During the year 1862 Dr. Harley communicated to the Medical and Chirurgical Society an elaborate paper on "The Pathology and Treatment of Jaundice," which showed that jaundice was not, as it had hitherto been supposed to be, a disease, but only a mere symptom, like pain, of many widely differing pathological conditions. The advanced views Dr. George Harley then enunciated have been adopted by every subsequent writer on liver diseases. It was in this year also that he had awarded to him, by the Royal College of Surgeons of England, its triennial prize of fifty guineas for his dissertation on the "Anatomy and Physiology of the Supra-Renal Bodies." He was likewise an active member of the Committee appointed by the Royal Medico-Chirurgical Society to study the subject of Suspended Animation by Drowning, Hanging, etc., the experiments of which were made in his laboratory at University College. At the British Association meeting at Cambridge, in 1862, he read the results of an elaborate investigation into the *post-mortem* appearances met with in animals slowly poisoned by daily minute doses of arsenic; also a paper on "Ozon and Antozon," exhibiting a rare form of fluor-spar (given to him by Professor Baron von Liebig), possessing the extraordinary property of emitting a strong odour of hypo-chlorite of lime when pounded in a mortar, and yielding to distilled water an oxidizing agent, which, by its reactions with different chemicals, he showed was, as Schönbein had asserted, antozon. Heating the mineral causes it not only to lose the property of giving off any odour, but also of transforming HO into HO^2.

In 1863 Dr. Harley published in the Obstetrical Society's *Transactions* an extraordinary case, in which gas was expelled with a loud noise from the vagina of a woman, aged thirty-three, at the same time exhibiting an ingenious contrivance by which he discovered that the gas expelled was simply air which had been previously sucked in by an abnormal spasmodic action of the abdominal muscles.

In June, 1863, he communicated to the Royal Medico-Chirurgical Society a paper

"On the Ordeal Bean of Old Calabar," in which he drew an interesting comparison between its action and that of belladonna, woorara and conia. In August, again, he furnished the British Medical Association with an account of the botanical characters and therapeutical properties of the Ordeal Bean, which was translated into French, and published by Professor Robin in the *Journal d'Anatomie et de Physiologie de Paris.* In 1863, also, was issued Dr. Harley's work on "Jaundice: its Pathology and Treatment," the appearance of which marked a new epoch in the study of the diseases of the liver and pancreas, as it proved the pioneer of the revolution in hepatic pathology which the subsequent twenty years have brought forth. As the *Medical Times* said, in 1884, while reviewing his large work on the liver, the publication of this monograph on Jaundice made him "widely known as a highly-accomplished physician, and an able and original student and interpreter of the etiology, diagnosis, and treatment of the diseases upon which he wrote."

Dr. George Harley's hospital cases, reported in the weekly journals, are too numerous to be mentioned, but one must be alluded to, as a clinical curiosity. It was "An extraordinary case of spasmodic cough in a girl aged fourteen years." The number of times the girl coughed was carefully counted at intervals by students specially appointed for the task, and ascertained to be at the rate of seventy per minute—that is to say, 4,200 times per hour; and, reckoning that the girl coughed only twelve out of the twenty-four hours, which she no doubt did, she coughed the enormous number of 50,400 times daily. Under anti-spasmodic treatment she completely recovered. (*Medical Times and Gazette*, 1st August, 1863).

In 1864 Dr. George Harley took an active share in the foundation of the Edinburgh University Club. He belonged to its first Council, and it was on his proposition that Sir David Brewster was chosen its first President. In this year he was elected to the Fellowship of the Royal College of Physicians of London, having already been a Fellow of the Edinburgh College since 1858. In 1864 he was an active member of the Committee appointed by the Royal Medical and Chirurgical Society to report on the Physiological and Toxical effects of Chloroform, the experiments on which, like those on Drowning, were performed in his laboratory at University College.

At the Bath meeting of the British Association, in 1864, Dr. Harley for the first time appeared in the ranks of the Anthropologists, and read a paper on "The Poisoned Arrows of Savage Man," illustrated by the exhibition of poisoned arrows from every quarter of the globe. Dr. Harley aimed to demonstrate that both North and South America were originally peopled from different parts of Asia—more especially from Borneo and China. He proved his theory as regarded South America, by showing to the meeting the blow-tubes and poisoned spikes of the Malays and the inhabitants of Guiana respectively. There is, however, a most remarkable difference in the physiological nature of the poisons employed ; for, while in Borneo it is the antiar, heart-paralyzing poison of the upas tree, in Guiana it is the limb-paralyzing woorara of the strichnos toxiferos tree. Thus while one poison produces a dead heart in a living body, the other attaches a dead body to a living heart. In 1865 Dr. Harley published, in the Royal Medical and Chirurgical Society's *Transactions*, notes of two cases of Intermittent Hæmaturia, bringing before the profession, for the first time, the important fact that, in certain forms of malarial disease, all the constituents of the blood may be eliminated by the urine, making the liquid either chocolate-coloured or quite red, and yet scarcely a single whole blood corpuscle may be detected in it by the microscope.

In 1886 appeared a book on "Histology," being the demonstrations of microscopic anatomy as a guide to the animal tissues in health and disease, which Prof. Harley had given at University College, edited by his old pupil, George T. Brown, afterwards Inspector to the Board of Health. The second edition of the book he edited himself.

After fifteen years continuous working with the microscope, an unfortunate accident happened to Dr. Harley. Suddenly, while he was working with a small lense under a great illumination, without the slightest warning, a blood vessel gave way in his left retina. As this occurred during the winter session, and it caused him at first only discomfort, he went on with his microscopical lectures for nearly two months, when an attack of acute retinitis set in, followed by a glaucoma so severe that those of the oculists he consulted recommended extirpation of the diseased eyeball, in order to save the sound one, which had become sympathetically affected. He, however, firmly declined to submit to the operation, saying he would first try the effect of complete physiological rest, by going into a totally dark room for three, six, or even ten months, as might be necessary. The experiment was tried with the most remarkable result, as was reported in the *Lancet*. After living in a couple of totally dark rooms—a bedroom and a large airy sitting room—in a house at Shaldon, in Devonshire, for nine months, during which time he never saw so much as his own hands, he came forth a cured man. Instead of losing his visual power by the darkness, his vision became excessively acute ; but he for a time lost the power of differentiating colours—everything appearing to him as either black or white—and of calculating even the shortest distances by the eye ; two facts which prove that the calculation of distance, and the distinction of colour by sight, are not intuitive, but rather the offspring of education, and explain why infants continually knock over the things they try to take hold of. The colours which he was longest in being able to differentiate, were pale greys and mauves. For the first month all mauves, blues, greens, and yellows appeared to him to be perfectly white; while all greys, browns, and reds looked as distinctly black. The details, as recorded in the *Lancet*, 1st February, 1868, are exceedingly interesting, as well as instructive, if for nothing else than showing what determination, coupled with perseverance, will accomplish.

While Professor Harley was undergoing his probation in total darkness, his mind was not idle. Having had a small portion of his large sitting room partitioned off, an amanuensis sat there, and wrote, at his dictation, among other things, a book which he published in 1872, entitled "The Urine and its Derangements," which was not only shortly afterwards reprinted in America, but translated into French and Italian. On his return to London, after a two years' absence, with his eye cured, but not yet strong, he expected to find himself a ruined man, in so far as his consulting practice was concerned. But, to his surprise and relief, exactly the contrary proved to be the case.

No sooner was Dr. George Harley back in London than he became as busy as ever. In May, 1868, he took a prominent part in a deputation from the Edinburgh University Club to the Lord Advocate, to obtain Members of Parliament for the Scottish Universities, and subsequently acted as Chairman of the London Liberal Committee—though himself a Conservative—in order to get Dr. Lyon Playfair, as a scientific man, to represent the University of Edinburgh.

In 1878, appeared from his pen, in the *Haddingtonshire Courier*, a series of articles under the *nom de plume* of "G: Virtute et Fide," on the "Ecclesiastical Buildings of Haddington," more especially on its fine Abbey Church—the Lucerna Laudoniæ—with which certain ecclesiastical members of his family had been intimately connected. Among other of his non-professional literary productions, allusion may be made to a Christmas Carol, entitled "My Ghost Story," which appeared in Mrs. Riddell's "Home," a Christmas Annual for 1879-80. This is a capital story for both young and old, if only they be believers in banshees, wraiths, hobgoblins, and other such like "uncannie things." He has also published, in the Selborne Society's Letters, a psychological paradox, under the title of "A Blackbird's Widowhood, Wooing, and Second Wedding." (August, 1887.)

Enough has now been said of Dr. Harley's general writings to prove that he is a man of varied attainments; but his one great hobby seems to be defined in the single word "Simplification." For not only has he greatly simplified the means of Physiological and Chemical research by the adoption of various contrivances to save time, and has invented a microscope (bearing his name), which, by a simple adjustment of its appendages, can be transformed, in the twinkling of an eye, from a monocular into a binocular, or into a polarising instrument either of a high or of a low power; but, in

1877, when the Spelling Congress met in London, he even tried his hand at reforming our orthography, and published a book, entitled "The Simplification of English Spelling," in which he powerfully advocates, as a preliminary stage to any great spelling reform, the total omission of redundant and useless duplicated consonants from every word in the language, except personal names.

By far the most important work that has appeared from his pen is a large one, on "Diseases of the Liver," which may not only be regarded as his *magnum opus*, but as a book opening an almost entirely new epoch in the study of the affections of which it treats; for its author has succeeded in proving the truth of the motto borne on the title page, that "true science is the key to wise practice," by giving numerous illustrations of the manner in which, when Physiological Chemistry is discreetly applied at the bedside, it not only elucidates some of the very darkest problems in the etiology and pathology of disease, but furnishes the busy practitioner with a trustworthy guide to successful treatment. Moreover, in it Dr. George Harley strives successfully to prove that Nature, in things medical, as in everything else, invariably acts on one great and uniform plan, and that, notwithstanding the apparent incongruities in the nature and clinical history of the hepatic diseases met with in different quarters of the globe, when the light of modern science is focussed upon them their pathology is found to be everywhere identical; the difference in their degrees of virulency not being entirely due to climatic influences, but partly to the constitutional peculiarities of the sufferers, originating in differences in their modes of life. Not only was the book reprinted both in America and Canada, but it was translated into German by Dr. J. Kraus, of Karlsbad, the well-known writer on liver affections; and even Dr. J. Cyr, the French translator of Murchison's book on the Liver, acknowledges (in the *Journal de Médecine* of the 3rd of February, 1883) that he knows of no other work on the Liver which can be advantageously compared with that of Dr. George Harley from a practical point of view. The *Canadian Practitioner* speaks of it as being not only "a storehouse of practical information, but a standard treatise, *sui generis*, on the subject of which it treats." The *Medical Herald* says that its text "bears evidence of that richness of both scientific and practical knowledge which constitutes the indisputable right to authorship; and its whole subject-matter is treated in such a masterly manner that the work is destined to find a place among the classics."

The two last publications Dr. Harley has placed before the profession are a pamphlet, showing how the existence of impacted gall stones in the bile ducts can be ascertained by sounding; and a book, which appeared in 1886, on "Inflammations of the Liver and their Sequelæ," in which, among other remarkable novelties in the way of treatment, he shows how, not only biliary sand and small gall stones from the gall bladder, but likewise renal calculi impacted in the ureters, can be successfully expelled by judiciously regulated digital manipulation ; how the capsule of Glisson can be advantageously punctured in cases of congestive liver induration ; and how acute hepatitis may be cured by direct hepatic phlebotomy.

Dr. Harley married in 1861, Emma Jessie, the youngest daughter of James Muspratt, of Seaforth Hall, and sister of Dr. Sheridan Muspratt, editor of the "Dictionary of Chemistry," by whom he has four children, two sons and two daughters. His eldest son, Vaughan, has followed the footsteps of his father, and entered the medical profession ; while his eldest daughter, Ethel, has married Alec, eldest grandson of the late Dr. Alexander Tweedie, F.R.S., Physician to the London Fever Hospital, and the well-known editor of "The Library of Medicine."

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GEORGE MURRAY HUMPHRY,

M.D., F.R.C.S., F.R.S.

PROFESSOR GEORGE MURRAY HUMPHRY, the third son of William Wood Humphry, Esq., Barrister, residing at Sudbury, in Suffolk, was born at that place on July 18, 1820, and was educated at the Sudbury and Dedham Grammar Schools. At the age of sixteen he was apprenticed to Mr. J. G. Crosse, of Norwich, the author of the work on "Urinary Calculus," and one of the most eminent of provincial surgeons. He there became familiarized with the ordinary dispensing and other routine work of a surgery, regularly attended the practice of the Norfolk and Norwich Hospital, and was early initiated in seeing and dressing patients, in taking cases, and in general hospital duty, under the keen eye of an exact and very acute master. He had entered the profession with a disinclination to it, and had commenced it unwillingly. But he has always been grateful that the books first put into his hands were Mrs. Marcet's "Conversations in Chemistry," which gave, in a clear, easily intelligible, and interesting manner, a good conception of the chief principles of physics, and awoke in him for the first time a pleasure in study; and, secondly, the "Anatomy and Surgery" of John and Charles Bell. The Bells were artists with the pen as well as with the pencil and the brush; they brought the prominent facts into the foreground, and threw a glow over the whole subject, so that anyone can enjoy their writings; and enjoyment in reading has much to do with remembering what is read.

"Crosse, one of the most energetic men and assiduous students of his profession I ever knew," says Dr. Humphry, "took much interest in his pupils, directed us, examined us, went over with us the specimens in his museum, which he had laboriously collected and skilfully mounted, took us to his more interesting cases, and spurred us on. Some of his encouraging words have abided with me all my life. He wrote copious notes of cases, with reflections on them; and I tried my prentice hand in imitating him. He gave lectures at the Hospital, and I still have the notes of them as I wrote them out. The other surgeons to the Hospital—Dalrymple and Johnson—were also men of mark, interested in their work and in their pupils. It was a first-rate introduction to the profession to live in the house with such a master as Crosse, and to have one's first zeal aroused in such a place as the Norwich Hospital. The professional events and lessons of that period—and they were many and

Yours truly

G. M. Humphry

important—were stamped upon my memory as no others have been. It was a happy time; my apprehensions and my dislike to the profession and the hospital gave place to something of an enthusiasm for both. I liked the old, irregular, narrow-streeted city, with its Norman Castle, its Grand Norman Cathedral, its river, its beautiful environs, and its fine position. I liked my teachers and my comrades—the former have long since passed away, of the latter some are still my friends. I learned a great deal; and I was sorry when the three years were gone and London life was to begin."

In 1839 Mr. Humphry entered at St. Bartholomew's Hospital, where his feelings were soon stirred again, and his ideas enlarged; for there he found Lawrence, whom he says he has always regarded as "the greatest teacher of surgery since the days of Hunter," Latham, who was a great instructor in clinical medicine, Burrows, who was scarcely less so, Paget, whose influence for good in a variety of ways was incalculable, and a number of good men—"friends," he says, "to whom I owe more than I can tell." At St. Bartholomew's he gained several prizes; he passed the first M.B. Examination at the University of London in 1840, and obtained the Gold Medal in Anatomy, the Exhibition in that subject being won by Edmund Parkes. He passed the College of Surgeons and the Apothecaries' Hall in 1842; and, in the same year, was elected Surgeon to Addenbrooke's Hospital in Cambridge, thus obtaining a position and opportunities which have rarely fallen to one so young. Holding this office, he was in 1844 elected one of the body of Fellows of the Royal College of Surgeons directed by the charter, though he was then below the required age of twenty-five. Circumstances thus admitted him to that honour at a younger age than has been the case with any other of the Fellows. From his first appointment at the Hospital he has regularly given clinical lectures and instruction; and he gave also a short course of lectures on Surgery, which was printed in the *Provincial Medical and Surgical Journal,* in 1849-50. The surgical lectures, however, he was unable to continue, being asked, in 1847, to assist the Professor of Anatomy (Dr. Clark) in his lectures. He then entered the University, became a member of Downing College, graduated as M.B. in 1852, and subsequently, in 1859, took the M.D. His practice in the University, and in the town and neighbourhood, was large, and, together with the lectures on Anatomy and Hospital Work, was often too much for a not very strong constitution, and led to several very severe illnesses. On the resignation of Dr. Clark, in 1866, Dr. Humphry was elected to the Professorship of Anatomy, and then found it necessary to considerably curtail his private practice, in order that he might more fully devote himself to the development of the University School of Medicine, which he had much at heart. None but Cambridge men can know and fully appreciate how much that admirable School owes to the strenuous efforts and energetic determination of Professor Humphry. To him is due the credit of having raised a University

School of Medicine, whose continued existence is but a tribute to the old world associations of Cambridge, and to its high rank among modern Schools, uniting as it does all the scholastic attractions of an ancient University to the progress and advancement of modern scientific research. In this respect, Cambridge ably sustains the traditions of the past, and keeps up that leadership in the march of knowledge which determined the pre-eminence of particular Universities in Mediæval times; a pre-eminence that many similar bodies in later days have been content to rest upon, without maintaining the same intellectual progress upon which it was founded, and on which it ought to depend.

When settled in Cambridge, and much associated with the University, Dr. Humphry felt, he says, the importance of expanding the Medical School, and, thereby, connecting the University more closely with the profession. It seemed monstrous to him that one of the great teaching bodies of England, with endowments and injunctions for the promotion of all knowledge, should be usurped almost entirely by a few subjects, and should so much ignore Medicine and the various Natural Sciences upon which the prosperity and welfare of the country must in future greatly depend. Human Anatomy was clearly the foundation stone. If it could be well laid, the rest of the superstructure would follow. That has proved to be the case. Physiology, Comparative Anatomy, and Morphology, have followed and flourished; and the various collateral sciences—Chemistry, Physics, Botany, and others—have partaken of the increase. A fondness for museum work, and a high estimate of the value of the information obtained through it, commenced at Norwich, and increased in the valuable pathological collections at St. Bartholomew's, the College of Surgeons, and the various London schools, induced Dr. Humphry to attach himself early to the Pathological Collection of the University, which then consisted chiefly of specimens purchased from the Executors of Professor Macartney, of Dublin, and he has ever since devoted, and still devotes, much of his spare time to increasing and improving the collection, and rendering it worthy of a University Medical School and Examining Board. In teaching both Anatomy and Surgery, it has been his object to connect the two, and to regard both, as far as he could, from a scientific as well as from a practical point of view, and to render them educational as well as useful. The facts of Anatomy and Surgery are to be esteemed, not merely for their direct practical value, but also for their suggestive and thought-exciting quality. Especially in a University should this be so; and especially worthy of the highest efforts of a University is the attempt to apprehend, and, by correct apprehension, to correct, the aberrant processes of the most delicate and most marvellous of physical organisms. The teacher of Medicine, in any of its branches, at Cambridge, has a noble and inspiring vocation and an intelligent, appreciative class. It has for many years been Professor Humphry's lot to enjoy this privilege; and, believing that medical students are sharers in that love of knowledge which is the common heritage and possession of the members of the human family, unless it be squeezed out of them by the examination press, and that therefore the sympathy of the class is naturally with the teacher, the privilege has always been a pleasure to him.

By the statutes of the University, which had been recently passed, it was provided that the stipends of the Professorship of Anatomy, and of certain other Professorships, should be increased when vacancies occurred; and, as the stipend in that case would be sufficient to induce the holder of the chair to devote himself exclusively to its duties (which had become necessary in consequence of the increased and increasing number of the pupils), Dr. Humphry announced his willingness to resign the Professorship of Anatomy and be transferred to a Professorship of Surgery, without a stipend, if such a Professorship were established. This offer was accepted in the spring of 1883. He was elected Professor of Surgery; and Professor Macalister, of Trinity College, Dublin, was elected Professor of Anatomy in his place. He is now therefore able to devote himself more fully to the study and teaching of Surgery, from which he had been for many years to a considerable extent diverted by the requirements of the Professorship of Anatomy. He gives a regular course of Lectures on Surgery, and attends daily at the Hospital for clinical instruction.

In 1859 Professor Humphry was elected a Fellow of the Royal Society, and has served on the Council. In 1868 he became a Member of the Council of the Royal College of Surgeons of England, and was re-elected in 1876; and from 1877 to 1887 he was on the Court of Examiners. He delivered the Hunterian Oration in 1879, and the Lectures on Anatomy and Physiology in the College, as Arris and Gale Lecturer, in 1872 and 1873. The subject of these Lectures was "Human Myology;" and they were published in the *British Medical Journal*, 1872-3. He declined to be nominated for the offices of Vice-President and President of the College, because he felt that the proper discharge of the duties of those offices would be incompatible with the fulfilment of his Professorial and other duties at Cambridge. In 1869 he succeeded Professor Paget (who was then elected President of the Council) as representative of the University of Cambridge on the General Medical Council. He acted, on behalf of the Council, as visitor of the Examinations of the Universities of Scotland and Ireland, and of the College of Physicians of London, 1873-5, and is a member of the Executive Committee of the Council. At the present time he is Examiner in Surgery at the University of Oxford, and at the College of Physicians. On the formation of the Anatomical Society of Great Britain and Ireland, in this year, he was elected the first President.

He has long been a member of, and taken an active part in, the British Medical

Association, and was for several years Secretary to the Cambridge and Huntingdon Branch, of which he has also been President. He delivered the Address in Surgery at the General Meeting of the Association at Cambridge in 1856, presided in the Section of Anatomy and Physiology at Worcester, and was President of the Association at the General Meeting at Cambridge in 1880. In his address on this last occasion he proposed that the Association should undertake the work of the Collective Investigation of Disease; and he has since acted as Chairman of the Committee for that purpose. When the Association met at Ryde, in August, 1881, he was elected a Vice-President for life. At that meeting, in moving a resolution on the subject, he expressed himself as strongly impressed with the importance of Vivisection to the advancement of Medical Science. "The first argument raised against vivisection is the question, *Cui bono?*" he said, "What good can it do to medical science and medical practice? To one who surveys the progress of medical science from its beginning, this question seems to be scarcely possible for persons to ask. Almost every advance in our knowledge of the workings of the human body has been made through vivisection. Our knowledge of the movement of the blood, of the mode of action of the heart, and of the other processes by which the circulation of the blood is effected; our knowledge of the functions of the nervous system—of the brain, and the several parts of the brain, and of the spinal cord, and the several parts of the spinal cord, of every nerve which passes from the brain and the spinal cord—as well as our knowledge of the influence of those nerves over every organ and structure of the body—the heart, lungs, stomach, pulse, kidneys, bladder, skin, and the muscles—is almost entirely due to vivisection. The knowledge also of the great processes of secretion, of the functions of nearly every gland, and of nearly every organ, is, in great measure, derived from the same source. What has been the influence of this upon medical treatment? Almost all great advance in medical treatment has been due to better medical knowledge, and that better medical knowledge is greatly due to the advancement of physiology. Deduct the knowledge which we have received through vivisection, and conceive what a chaos would be our knowledge of the human body and our ideas of the treatment of the diseases of the human body! Every man who has made real advances in the knowledge of the workings of the human body has done it through vivisection. From Galen, and Vesalius, to Harvey, to Hunter, to Hope, and Brodie—for this, most practical of modern surgeons, was a vivisector—every one of these men, and they are few among the many, has made his greatest discoveries through vivisection. And in our own day, the observations which have been made, and which have led to the better treatment of wounds (and conceive the importance of that), and the better methods of securing blood-vessels, have been due, as I know, in great measure to vivisection."

He went on to speak of the great discoveries of Pasteur, due to his use of vivisection; and, in dealing with the morality of the practice, he said, what is abundantly true, that the work of the vivisectionist is hallowed by the excellence of his motives, and by the great ends he attains.

Professor Humphry is a member of the British Association for the Advancement of Science, to some of the meetings of which he has made communications; and, at the Nottingham meeting (1867), he presided in the Physiological Section, and delivered an address, which was printed in the *Journal of Anatomy and Physiology.* At the Royal Institution in London, in 1870, he gave six lectures on the "Architecture of the Human Body," as part of the Fullerian Course; and, in January, 1872, he gave a Friday Evening Lecture on "Sleep." He took an active part in the formation of the Cambridge Medical Society a few years ago, and was for two years President of the Society. He delivered the Rede Lecture before the University of Cambridge in 1880, the subject being, "Man: past, present, and future." He is a Vice-President of the Sanitary Institute of Great Britain, and presided at its annual meeting in July, 1883, in London, and also at the Congress at Glasgow in September, 1883. He has served on the Council of the Senate of the University of Cambridge, and has taken an active interest in University affairs, and been President of the Philosophical Society. He is a Fellow of King's College, Cambridge; an Honorary Fellow of Downing College; a Corresponding Member of the Imperial Society of Surgery of Paris; a foreign Associate of the Anthropological Society of Paris; and an Honorary Fellow of the Medical Society of London, before which he delivered the Annual Oration in 1885, on "Old Age." He is also an Honorary Member of the Royal Medical Society of Edinburgh.

During many years Professor Humphry has been occupied in scientific researches of the highest interest and importance, the results of which are recorded in his very numerous publications. He is at the present time engaged in collecting information respecting the habits, constitutional and other peculiarities, and family history of aged persons, on behalf of the Collective Investigation Committee of the British Medical Association. Several of his communications to professional journals are of particular interest, notably one in the *Transactions of the Provincial Medical and Surgical Association* (vol. xvii.) on "A case of High Operation of Lithotomy"—an operation which had not at the time been performed with success in this country for many years; and another in the *Medico-Chirurgical Transactions* (vol. lxii.) on "Removal of a Tumour from the Bladder"—the first case operated on in England. In conjunction with Professor Turner, of Edinburgh, he commenced the *Journal of Anatomy and Physiology* in 1867. They have continued their work as co-editors up to the present time; a part appears each quarter, and the twenty-first volume of the journal has been completed. To this work he has made various contributions on anatomical subjects, which are named below. Professor Humphry is the author of "A Treatise on the Human Skeleton," "An Essay on Coagulation of the Blood in the Venous System during Life," "The Limbs of Vertebrate Animals," "The Human Foot and the Human Hand," and several other important works, of which a list will be found in the appended Bibliography. Resulting from his biological investigations, his theories as to the fins of fishes, and the development of the limbs of vertebrata, propounded in an article on "The Homology of the Mesial and Lateral Fins of Fishes" (*Journal of Anatomy*, v.), are very interesting. Some of these views will be found at length in his 4to monograph on "Limbs" (1870); and to them he added, as of unusual value, his studies on the growth of bone, on the influence of age on physical conditions, and on many branches of Comparative Anatomy.

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ROBERT SPENCER DYER LYONS,

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THE late Dr. Robert Spencer Dyer Lyons was born in the year 1826, at Cork, of which city his father, Sir William Lyons, was twice Mayor and High Sheriff. He was educated, first at Hamblin and Porter's Grammar School, and afterwards at Trinity College, Dublin, where he graduated in 1848, becoming a Licentiate of the Royal College of Surgeons of Ireland in the following year. Among his earlier studies was that of the microscope, and he was the first man in Ireland who lectured upon its use in the investigation of disease. This was at the Original School of Medicine, in Dublin, and his introductory lecture on Microscopic Anatomy and Pathology was published, in 1851, under the title of "An Apology for the Microscope." He also, under Dr. Parkes, founded the "Annals of Micrology," in *The British and Foreign Medico-Chirurgical Review*, and it was he who first made known to English students the name and works of Rudolph Virchow, the leader of European pathology.

Having acquired a reputation, Dr. Lyons was recommended by the late Dr. Parkes for the appointment of Pathologist-in-Chief to the army in the Crimea. Sir James Clarke selected him to fill that office, and the Minister of War commissioned him, in April, 1855, to report upon the diseases then making such terrible havoc at the seat of war, where, in the trenches before Sebastopol, according to despatches from Lord Raglan, the soldiers were dying like flies. Thus, before he had attained the age of thirty years, Dr. Lyons formed one of a group of prominent men, upon whom the gaze of the whole civilized world was riveted. At a time when necessity compelled our country to call our best men to the front, he stood out with others of strong character and distinguished fitness for the service of the State. With all the Generals commanding the allied forces in the Crimea his duties brought him into important relationship, as also with Lord Stratford de Redcliffe at Constantinople. He was given two able assistants, and was instructed to make *post-mortem* examinations of the bodies consigned to him, and to acquaint himself with the symptoms and characters of the diseases during their progress, both in our own soldiers and in the Russian prisoners, as well as in the French hospitals. He was also instructed to bring his great knowledge of the microscope to bear upon the pathological conditions. Thus directed, Dr. Lyons reached Scutari at the close of April, 1855, and found,

unfortunately for his purpose, that all but the expiring embers of the epidemics of the winter had disappeared; added to this, he had to wait a considerable time for the necessary instruments and appliances for the prosecution of his labours. Nevertheless, he paid, with his assistants, a series of clinical visits to the hospitals on the Bosphorus, and, after a time, proceeded to the Crimea, where he was enabled to make full investigations as to the nature of the diseases which had caused such ravages in the ranks. He came to the general conclusion that the soldiers had been so ill-clothed, ill-fed, and ill-housed during the winter, that their power of physical resistance to the attacks of disease had been materially lessened, while at the same time they were put to the great fatigue and exposure of trench-duty for long periods in the trying climate of the Crimea, unprotected from the vicissitudes of temperature, and often subjected to the effects of heavy rains. A more important conclusion, however, was that the extreme youth, incomplete physical development, and general immaturity of a very considerable proportion of the troops, had rendered them extremely subject to morbid influences, and to the invasions of disease, which had operated with two-fold energy, and with a more than doubly fatal effect. Dr. Lyons found that many of these youthful soldiers succumbed almost immediately under the shock of illness and grave surgical operations, while, of those who recovered, the convalescence was generally slow, lingering, and imperfect. He suggested that by some judicious system of "cross drafting," or some such expedient, the younger soldiers and recruits of one regiment, ordered into active service, might be replaced by the veterans of another; while, in the secondary depôts, on the high road to the seat of war, the former could undergo a gradual process of seasoning and acclimatization, which would greatly add to their value when called into the field. "A marked characteristic of the Crimean soldier," said Dr. Lyons, "was a premature appearance of age. The veteran of forty would be readily taken, by the inexperienced, for the old man of sixty to sixty-five; the youth of twenty to twenty-two wore the settled aspect of thirty-five to forty. With the haggard features of disease, especially that of a chronic kind, these appearances became still more exaggerated, often to a most marked degree." In the primary forms of disease observed in the camp, lesions of the abdominal organs were the great characteristics, and these commonly existed isolated, except when the disease assumed a chronic form, when a complexity of diseased processes was manifested.

For the valuable services he rendered to the sick and wounded Dr. Lyons was thanked by the authorities, in the field and at home, after the 18th of June; and, on the 8th of September, on the fall of the Russian stronghold, he was awarded the Crimean and Turkish medal and clasp for Sebastopol. He was also thanked by the French Generals for the assistance he rendered after the battle of the Tchernaya.

Dr. Lyons's report was published as a Blue Book, in 1856, and contained a minute account of the several diseases he had observed, with their special features in the Crimea, including their pathological anatomy. It was reviewed most favourably in the *Times* and other papers, as containing very able observations, and as laying down the principles on which future campaigns should be conducted, with a view to save life and minimize suffering. Mr. Sidney Herbert (Lord Herbert of Lea), and Lord Panmure, afterwards Earl of Dalhousie, were so much struck with its importance, indorsed as it was by Miss Florence Nightingale, that it led directly to the foundation of the Army Medical School, at Netley, and to all the reforms in army medical education that flowed therefrom. The report is well-known, and is cited in the French and German schools, and in the army medical literature of Europe and America.

In 1857, feeling how important a full knowledge of the pathological anatomy of the Yellow Fever would be, not only to the British Empire, but to humanity at large, Dr. Lyons undertook a voluntary mission of investigation to Lisbon, where, as well as in other towns of Portugal, that disease had broken out. The result of his investigations induced him to place before the King, Dom Pedro V., a full report, together with the proposal of various sanitary measures, which, being adopted, were of material assistance in restoring public confidence and reviving trade. For the important services he had rendered, the King and officials thanked Dr. Lyons, to whom were awarded the Cross and Insignia of the Order of Christ. The Government of this country, as fully alive to the great importance of his investigations as was the King of Portugal, took the question up, and a report which Dr. Lyons made to the General Board of Health, was, by command of Her Majesty, presented as a Blue Book to both Houses of Parliament. In this report Dr. Lyons entered very fully into the pathology of the epidemic, and into the climatological and other conditions supposed to be concerned in its causation. The nature of the epidemic, as Yellow Fever of a very fatal character, was placed beyond doubt by the clinical history and morbid analogy of the disease which he gave. Very interesting details, which had a practical importance, were furnished of the several markedly different forms in which the disease presented itself, indicating how the various conflicting accounts given by different writers of Yellow Fever epidemic, in different times and places, might be reconciled on the supposition that in one epidemic visitation one form of the malady was predominant, while, in another outbreak, the clinical characters presented were of a far other type of disease. Nothing, indeed, could be more distinct apparently from its congeners in the nosological category than the "algid" from the "sthenic" or "hæmorrhagic" variety of Yellow Fever, as presented in the Lisbon epidemic; but Dr. Lyons, in closely analyzing the essential phenomena of the several forms of disease, found that they were but varieties derived from a common stock. No less an authority than Dr. Parkes publicly, in lectures and writings, thanked Dr. Lyons for having finally cleared up this very obscure and, until then, contradictory subject. The report was read all over Europe and America, and has been cited in every subsequent work on Yellow Fever. Dr. Lyons's experience with the army in the East, and also in the fever hospitals of Portugal, led to the publication of his book on "Hospital Practice" in 1859; a useful work which has gone through several editions, and has been pirated in America. In the same year he published in the *Atlantis* (Catholic University of Ireland) an article on "The Climatology of Lisbon in relation to the Yellow Fever of 1857."

Dr. Lyons then joined the Jervis Street Hospital, Dublin, taking an active share in the education of the Army Medical Staff of the present day. He subsequently succeeded Sir Dominic Corrigan in the Government or House of Industries Hospitals, Dublin, and as Visiting Physician to Maynooth College. He had already, upon the recommendation of Sir Dominic, been appointed Professor of Medicine in the Medical School of the Catholic University of Ireland. In 1860 his "Treatise on Fever" appeared, in which an account of his investigations into the Lisbon epidemic is given. In his general observations, in Chapter I. of the work, he says to students of medicine: "By far the most important of the duties to which you will be called, when you pass into the world as practising physicians, no matter in what clime your lot may be cast, will be those which devolve on you in connection with fevers." After expressing his full belief in the statement of Sydenham, that, excluding deaths from violence, fevers constitute nearly two-thirds of all the diseases by which mankind perish annually, he goes on to show by figures the terrible havoc fever made among the French and English soldiers in the Crimea. He says: "From the 1st of September, 1854, to April, 1855, 4,228 men perished in the hospitals at Scutari alone, of whom but 359 died of wounds." This work went through several editions. In 1861 Dr. Lyons was made a Fellow of the King and Queen's College of Physicians of Ireland, of which some years later he became Vice-President.

In 1870 he was invited by Mr. Gladstone's Government to act with the Earl of Devon on a Commission of Inquiry into the treatment of Irish treason-felony prisoners in English prisons. The exhaustive report which followed this inquiry led to the liberation of the chief prisoners, among whom was O'Donovan Rossa, who had, it was proved, been kept for thirty-five consecutive days with his hands manacled behind his back or in front of him. While this inquiry was in progress, Dr. Lyons visited the French prisons, and his report upon the subject of French prison discipline as applied to political offenders, and upon the question of prison labour, and the utilization of the profit derived from the prisoners' work for their support when in gaol, and their maintenance when released therefrom, was regarded as being of deep interest and great practical value. Dr. Lyons was able without difficulty to prove that the French system had great advantages over the English one, which turned the released prisoner virtually without means of subsistence upon the world, and left scarcely any means of livelihood open to him except that which led through crime.

Dr. Lyons was long interested in the cause of education in Ireland. His "Intellectual Resources of Ireland," published in 1873, being the substance of an address delivered to students in the Catholic University of Ireland—powerfully putting forward the necessity that exists for an extended system of university education—may be regarded as evidence, not only of his strong desire for the spread of knowledge, but of his most assiduous exertions in the endeavour to bring about that desirable end. So highly were his energetic efforts in the cause of university education valued, that he was nominated by the Crown as one of the Senators of the Royal University, when that institution was created in 1880. He was a strong advocate of measures tending to elevate the moral tone, and raise the standard of the general education of the political and civil services, and of the country at large. He powerfully urged the necessity for teaching the languages of Russia and the East, in the interest both of English judges and political agents in Oriental countries, and of those they judge and govern. He held the opinion that the youth of Ireland possess a latent ability which needs but opportunities for development. In a letter addressed to the Earl of Beaconsfield, dated July 15th, 1878, on the subject of Irish (Intermediate) Education and the Civil Service of Cyprus (and dedicated to Lord Stratford de Redcliffe, in memory of kind attentions received at Constantinople), he says :—"The administrators and the governed too frequently are separated by lines of interest and policy well known to the few who are initiated and can see below the surface, but wholly unappreciable to those who believe that uniformity of religious practice and costume indicates common nationality and like bonds of interest. . . . . . No worse political agent can be found than the Ottomanized Frank, Teuton, or Greek, who barters self-respect and religion for the privilege of fleecing, almost at will, the long-suffering classes of a mixed Ottoman State or dependency. In a lamentably large proportion of cases the insurmountable barrier of language prevents the possibility of tracing out wrong, of hearing the complaint of the sufferers, or of practically applying a remedy to the worst form of evil. . . . To this state of things the intervention of the whole tribe of dragomans, writers, and interpreters, lends but too fatal facilities, and all direct access to those willing and able to administer justice is cut off."

At the General Elections of 1868 and 1874, Dr. Lyons was asked to come forward as a candidate for various Irish seats, but he then declined to allow himself to be nominated. Subsequently, however, he withdrew his opposition, and sat in Parliament as member for Dublin from 1880 to 1885, as a Liberal not committed to Home

Rule, having previously been a representative of his native city of Cork. At the Dublin Election of the latter year, having somewhat lost touch with the advanced views of the Nationalist party, he did not contest a seat. It may here be remarked that one member of the same family, and more than one descendant of the same ancient sept, sat in the old Irish Parliament. Dr. Lyons's parliamentary labours in connection with the re-afforestation of Ireland, he considered to far transcend in public and imperial importance all others with which he was concerned. He awoke the British and Irish public to the vast financial importance of the question, which represents over thirty millions sterling of annual imports, the greater part of which we should be, he maintained, able to supply by home growth. The value of this for Ireland would be, he calculated, one hundred millions sterling, through the ultimate utilization of the five million acres of land now waste in the country; while a proportional quantity of waste land was shown to exist in England. It was flatteringly stated that this movement of afforestation promoted for England, Ireland, and Scotland, by Dr. Lyons, would only to be paralleled, if carried out, by what Sully, under Henry IV., and Colbert, under Louis XIV., accomplished for France.

Dr. Lyons's article on the subject, which appeared in the *Journal of Forestry and Estate Management*, in February, 1883, not only bears witness to the possession of great earnestness and energy, but to its author's power to move mountains of difficulty from his path, and, in the face of stupendous obstacles, to achieve practical results. Of this power the *Dublin Daily Express*, of September 10, 1883, spoke in terms of high encomium, mentioning Dr. Lyons as being "all but ubiquitous in his zealous action," and as "a host in himself." In the article named Dr. Lyons gave an exhaustive history of the forests and timber-trade of Ireland, and concluded with practical considerations on the subject. Both in the Land Act debates in the House, and in those on the Arrears Act, he specially introduced the subject of waste lands, and enlarged on the necessity of giving effect to his proposals for utilizing the remains of the Church surplus in the interests of re-afforesting Ireland. Out of the very ample margin of waste land in the country, his proposal was to afforest a C-shaped belt in the north, west, and south, of about one million acres. "We want men," he said, "of the greatness of mind of Lord Dalhousie, and of the practical energy of John Laird Mair, Lord Lawrence (of the Punjaub), to take up and prosecute this work in Ireland." Having satisfied himself that one of the most potent causes of Irish industry was the business of timber supply, it seemed to Dr. Lyons that the natural line of operations was to make efforts to replace the timber which Ireland once possessed. He several times, as is mentioned above, introduced the question to the notice of Parliament; and in 1884 brought in a Bill on the subject, in which he was supported by a large number of English, Irish, and Scotch members, who caused official inquiries to be made, and many reports on forestry in other countries were presented, which have a lasting value. The Bill was based on the declaration that it is an established fact that a due proportion of from one fourth to one third of forested lands to the unforested area of any country is necessary for the maintenance of the best climatic, meteorological, and terrene conditions, for the continuance of water supply, for the preservation of the soil, for the abundance of harvest, for the prosperity of agriculture, for the support of animal life in water and on land, and for the supply of the prime materials for numerous industries. It is to be regretted that Dr. Lyons did not live to prosecute these useful labours in the House of Commons.

Dr. Lyons's efforts for the welfare of Ireland were not bounded by the great questions of education and re-afforestation, for he bestowed much consideration upon her inshore and deep-sea fisheries, her shelter piers, harbours, and other marine works, as well as upon her natural industries and trade. His parliamentary career was marked by much other useful work. He made many efforts and projects for rendering more effective the procedure of the House of Commons, and he took a large part in the Eastern Question, and made a speech on Turco-Egyptian matters which was considered to have dealt powerfully and lucidly with that obscure and intricate problem. Again, on May 1st, 1883, he delivered a very eloquent address against the second reading of the Parliamentary Oaths Act Amendment Bill, which he criticised most severely. He also delivered a highly important speech at the banquet of the Chamber of Commerce, on the rising subject of Imperial Federation, wherein he laid down the basis of a settlement of this vital question, in a proposal for a meeting of the Federal Representatives of the Empire and her Colonies and Dependencies, triennally in Westminster Hall, without trenching upon the work of the Lords and Commons in their respective Houses.

Dr. Lyons was a Deputy-Lieutenant of the County of the City of Dublin, an Honorary M.D. of the Queen's University of Ireland, a Member of the Royal Irish Academy, a Member of the General Medical Council for Ireland, Physician to the Richmond and other Hospitals, Professor of the Practice of Medicine in the Catholic University of Ireland, and a Senator of the Royal University.

Dr. Lyons married, in 1856, Maria, daughter of the late Right Hon. David Richard Pigot, Chief Baron of the Exchequer in Ireland. He died at his house in Merrion Square, Dublin, after a very short illness, resulting from an apoplectic stroke, on Dec. 19, 1886. As the *Freeman's Journal* said upon the occasion—"In all the relations of his private life he can be said to have played a perfect part. Few knew the depth of his affection; it can only be measured by the loss that is sustained in its absence. Amongst his friends all will miss the genial, handsome face, the winning courtesy of manner, the highly cultivated mind, and the brave and gentle heart, which, amid disappointments that would have crushed a poor, weak spirit, beat only with kindliness and bright hopes in the future. Faults there may have been, but only those traceable to errors in judgment of a man of strong will and determination, to whom a sense of duty, truth, and work to be done were the keystones of life.

> "Vitiis nemo sine nascitur ; optimus ille
> Qui minimis urgetur."

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Yours very truly
Alfred Meadows

ALFRED MEADOWS,

M.D., F.R.C.P., M.R.C.S., F.R.G.S., J.P.

THE well-known physician who forms the subject of this sketch was a native of Suffolk, and was born at Ipswich on the 2nd of June, 1833. His family may be traced back for many generations in that county, under the names of Meadowe, Medew, and Medewe. He was first educated at the Grammar School, Ipswich, whence he proceeded to King's College, London, there giving signal promise of the after distinction he was to attain. He commenced his strictly medical career by being articled, after the excellent custom of the time, to Mr. William Elliston, one of the principal medical men of the county, who resided at Ipswich, and whose numerous appointments gave the young student large opportunities for learning the practical work of his profession. Mr. Meadows matriculated at the University of London in 1853, and in the October of that year entered as a student of the Medical Faculty of King's College. There he carried off prizes in botany, chemistry, materia medica, clinical medicine, and midwifery, and was awarded the Medical Society's prize for an original essay on the "Influence of the Imagination in the Production and Cure of Disease." At King's College Hospital he was appointed clinical clerk to Dr. Todd, and dresser to Sir William Fergusson, and he finally received the appointments of House Physician and Physician-Accoucheur's Assistant, both of which are resident. On leaving King's College Hospital he became an Associate of the College, and it may be noted here that at a later period the College elected him one of its Honorary Fellows.

In 1856 Mr. Meadows took the Licentiateship of the Apothecaries' Hall, and the Membership of the Royal College of Surgeons, with the Licentiateship in Midwifery, for his means at the time were small, and he did not feel himself in a position to undertake the risks of a consulting practice only. In the next year he gained the Bachelorship in Medicine of the University of London, passing the first and second examinations in the first division, and taking honours in Surgery and Midwifery. Having attained his degree in this honourable way, the rules of the University permitted him to dispense with one year's study there, and he accordingly went to Paris, and spent the winter in hard work. Returning to England he took his degree of Doctor of Medicine in 1858 in the first division, and, in the following year, became a Member of the Royal College of Physicians, which bestowed its Fellowship upon him in 1873, and he was subsequently elected one of the Examiners in Midwifery and the Diseases of Women to the College.

Already, in 1859, Dr. Meadows had paid great attention to Obstetrics, and his long series of contributions to the *Transactions* of the Obstetrical Society, of which he was an original member, began with the first volume—on "A Case of Twins, one blighted, the other anencephalous." He had been appointed Physician-Accoucheur to the St. George's and St. James's Dispensary, and, in 1860, he became Assistant Physician for the Diseases of Women and Children at King's College Hospital. Again, in 1863, he was made Physician to the General Lying-in Hospital, and, in 1865, Physician to the Hospital for Women in Soho Square.

Dr. Meadows did not, however, confine himself to the diseases of women, as is witnessed by his translation, in 1863, of M. Henri Roger's excellent treatise on "Clinical Researches on Auscultation of the Head," published originally in the *Mémoires de l'Académie Impériale de Médecine* (tome xxiv.) To this time also belongs his essay on the "Treatment of the Diseases of Early Life," wherein he laid great stress upon the importance of studying the "Natural History of Disease," the object being, by sustaining the vital power, to prevent the development of a diathesis in the child. "If I am right," he concludes, "in what I have said, it is our bounden duty never knowingly to do anything which may lower vital power in a child, for we have it in our power to a certain extent to prevent, in those predisposed, the full development of morbid conditions which are sure to entail ten thousand times more suffering than that we seek to relieve. . . . . We are also able with far more certainty to guard against even the very appearance of evil, by such a timely and judicious use of the means which we possess, as shall prevent even the very suspicion of a diathesis resulting from, and originating in, an acute disease."

In 1871, on the resignation of Dr. Tyler Smith, Dr. Meadows became Physician-Accoucheur to St. Mary's Hospital, and Lecturer on the Diseases of Women and Children at St. Mary's Hospital Medical School. In that year he delivered at the latter Institution a remarkable address on "Biological Science in relation to Religious Belief," in which he showed that religious belief is not incompatible with the cultivation of physical science. "Now," he said, "I am not one of those who believe that true science is or can be in any way or degree opposed, either in theory or in fact, to what is called Revelation. I have too strong a faith in the latter, and too high a love of the former, ever to believe in such a possibility, or to entertain the shadow of a doubt as to their complete oneness in all essentials. It has always appeared to me a simple impossibility that true science and revelation should ever contradict each other." Dr. Meadows did not think that, even if the theory of evolution were proven, it could effect man's dignity, or his responsibility to his conscience and his God. To the question, Whence did life come? he replied, that no strictly scientific answer could be given, because we have no sufficient data upon which to found an opinion; and to the question, What is Life? he answered, that it seemed to him that the idea of the distinct and separate force governing the organic world, plant and animal alike, and called by the name of "vital force," accorded best with the phenomena actually observed of it. In this address he endeavoured to give to the students some idea of the nature of that mysterious principle, force, power, or property, which they would be called upon to study in its normal and abnormal manifestations in the human body; and which it would be their privilege and duty to guard, protect, and cherish, not only against the attacks of evil from without, but from those also within. Medical men are too apt, he thought, in the close study which they give to the symptoms of disease, and the care with which they investigate its effects upon the tissues of the body, to lose sight of, or at least to undervalue, the fact that it is not so much material or organic as dynamical perfection which they should endeavour to maintain. Their whole course of study, he believed, is apt to engender a too materialistic view of disease, and to obscure their view of the morbid processes by which disease is brought about. "It is so much easier," he said, "to recognise the effects of what we call disease; the mind comprehends so much more readily what the eye sees and the hand can touch, that we are almost inevitably drawn to the recognition of the organic lesion as the sole cause of the patient's disease, and as the object towards which our remedial efforts should be directed. But it is certain that if we inquire into the matter, we shall find in most cases evidence of what is called functional, or as I would term it, dynamical derangement, long before the existence of organic lesion; and a little thought will suffice to convince us that functional derangement is but another term for the abnormal operation of life-force."

At this time also Dr. Meadows paid great attention to the subject of Out-Patient Hospital Administration, and took a prominent part in a movement which had for its object to remove some abuses that had grown up about the management of hospitals, and to open their advantages in a larger degree to the working and poorer classes. He was one of those who signed a notice calling a meeting to discuss the question, which was held at the rooms of the Royal Medical and Chirurgical Society on March 20th, 1870, when he was appointed a member of a committee to investigate the working of out-patient departments, and was made chairman of a sub-committee to examine into that of general hospitals. Dr. Meadows had a great share in framing the report of the committee, which was published in 1871.

It was, however, as an obstetric practitioner that Dr. Meadows was most widely known in many circles both at home and abroad, and his many contributions to the Societies showed that he had entered deeply into the pathology and treatment of the diseases of women. His "Manual of Midwifery" was very warmly received, and went through five editions, and he also, in this department, translated the valuable "Clinical Researches on the Diseases of Women" of MM. Bernutz and Goupil. Amongst his most important contributions may be named his "Remarks on the Treatment of some forms of Extra-Uterine Gestation," wherein he suggested a means of reducing the mortality from the operation of gastrotomy; and a paper on "A Case of Gastrotomy for supposed Extra-Uterine Gestation," from the failure of which he drew lessons as to the uncertainty of diagnosis in such cases. Both these were contributed to the Obstetrical Society of London. In the *American Journal of Obstetrics* (vol. vi.) will be found a valuable paper by Dr. Meadows on "Ovarian Physiology and Pathology;" and he wrote "On the Diagnosis and Treatment of Fibroid Tumours of the Uterus" in the *Obstetrical Journal* (1875), and the *British Medical Journal* (1883).

In 1885 Dr. Meadows took a prominent part in the formation of the British Gynæcological Society, and was elected its first President in that year. Twelve months later he was able to say that the number of its members had already reached 400, a circumstance probably without parallel in the history of any similar Society. In his second Presidential Address, when he resigned the chair, he made a suggestion of great moment to the Society, which, he rightly said, touched a grand scheme that might be taken up by its members. "I have long felt," he said, "that this great city, the largest, the wealthiest, and the most intelligent in the world, with its boundless medical resources, and its vast field of gynæcological experience, ought to possess a hospital for the study and practice of gynæcology far superior to anything that exists at present, either here or abroad. Moreover, when we consider the position, character, and wide experience of those who practise gynæcology, the undoubted popularity of special hospitals (more particularly, I would say, those for the treatment of diseases peculiar to women)—a popularity which, I am convinced by the experience of more than a quarter of a century of special and general hospital work, is greatly in excess of the popularity of the special departments of our general hospitals—when we remember, too, that there is no really great School of Gynæcology in this metropolis, no educational facilities worthy of the name or equal to the importance of the subject, we must, I think, admit that there is a great want to be supplied; and I know of no body of men so capable of supplying that want as the Fellows of this Society."

In addition to the offices and honours mentioned above, Dr. Meadows was Consulting Physician-Accoucheur to the St. John's Wood and Portland Town Provident Dispensary, and to the West Herts Royal Infirmary; a Member of the Clinical and Harveian Societies; an Honorary Fellow of the Obstetrical Society of Berlin, and of the Medical Society of London; Corresponding Member of the Society of Physicians of St. Petersburg, of the Imperial Medical Society of Vilna, and of the Gynæcological Society of Boston; and a Fellow of the Royal Geographical Society of London. He was Harveian Lecturer in 1887. His professional services were in request in the best circles at home and abroad, as was testified by the distinctions he received. At the time of the marriage of H.R.H. the Duke of Edinburgh with the daughter of the Czar, Dr. Meadows was on a professional visit in St. Petersburg, and he was then presented at the Russian Court, and invited to the marriage ceremony. In 1877, when he was again called professionally to Russia, he was asked by the medical practitioners of Moscow to visit that city, where a dinner was given in his honour. On this occasion he visited the celebrated fair of Nijni Novgorod, as well as the Troitsa and other monasteries. In the following year, Dr. Meadows was retained to attend the Crown Prince of Sweden, who was seized with illness while staying at Hopetoun House in Scotland, and, on his patient's recovery, was presented with a fine piece of Swedish silver-work, and other *souvenirs.* He was also made a Commander of the Second Class of the Order of Vasa of Sweden.

Dr. Meadows's writings and practice were deeply imbued with the spirit of religion, and he had a grave sense of the responsibilities that belong to the career of the physician and surgeon. He felt, from experience, that there was a great snare for professional men in the disposition to regard their patients in the light of *cases* only, to be treated according to certain fixed rules of science, and sometimes even as subjects for the performance of deeply interesting vital operations. "When once the disease is recognised and we begin to apply the remedy," he said at a meeting of the "Brotherhood of St. Luke," of which he was Provost, "then it is our duty steadily to keep in view that what we have to treat is not disease only but a diseased person; not merely sickness, but a sick man; and, to carry this thought still further, to bring my meaning more prominently forward, we are to remember that if death be the probable issue, we have to deal not with death in the abstract, but with a dying person; not with a body in which, like a piece of machinery hopelessly worn out, we have to treat a mass of diseased tissue which precludes the continuance of the vital processes, and is therefore destructive of life, but that we have to deal with a body which is not only a living thing, but which is made in the image of God, and which contains within it, and has united to it, a soul that is God-like, divine, for it has been made a partaker of the Divine nature. . . . . . We are to bear in mind that our office as healers of disease makes us thereby guardians of natural law, and, in using remedies for the cure of disease, we are in reality for the time being instruments for the accomplishment of the Divine Will." Dr. Meadows's views on Medical Missions were also given in a paper read before the "Guild of St. Luke." He held that medicine should play a large part in missionary labours, but that the offices of the evangelist and the physician should be kept distinct in their practical working. "I cannot see," he said, "why, if priests are willing to go and spend their lives in such a glorious cause, young English medical men should be found wanting; assuredly no nobler cause can stir their hearts, nor can their talents be displayed in a higher or grander work."

The "Guild of St. Luke, Physician and Evangelist," is an association whose object is to promote and defend the Church of England, especially that section of it designated "Catholic" by its members, and to spread the views and practices of the "Anglican" party amongst medical men. Dr. Meadows was a strong supporter of this object. His education and tastes led him to take a prominent part in the Oxford movement, and to ally himself with the High Church party. He was one of the most earnest advocates of Ritualism in the Church of England, and, both by word of mouth and by his pen, did his utmost to further the cause. He maintained that ritual was a law of man's nature, not an irrational creation of past times, now to be contemned; that it was, in fact, *necessary* to members of the Church of England who, like himself, held "Catholic doctrine." He asked if there were not many circumstances in common life in which thoughts or ideas were represented by bodily gesture, and which could not be so well represented by any other process? "If this be so," he said further, "where is the difference in principle between the secular and religious representation of an idea by a bodily gesture? We," he added, "who practise ritual, and who hold it to be imperatively necessary in the highest act of Christian worship, affirm that the end and object of its adoption is 'to shadow forth by outward deed and gesture certain truths or ideas.'" He applied this to secular affairs, asking if there was any better way by which we could "shadow forth" a certain truth or idea, without expressing it in a set form of words, than by "outward deed and gesture?" If, for instance, one wants to express astonishment, indignation, grief, joy, he thought that it could not be better done than by "outward deed and gesture," unaccompanied by any words to convey that idea? "Nay," he said, "even if I use the words and make no 'outward deed and gesture,' do they not lose much of their force and meaning?" As a simple matter of *principle*, Dr. Meadows failed to see any difference between the ritual which the world and society expect in social and secular ceremonies, and that which he practised. There is, he maintained, the same thought, the same idea, underlying both, and if, in a well-organized society, ritual observances were *necessary*, even in the common intercourse and courtesies of daily life, as they certainly were, at least among those who claimed to he influenced by good and courtly feeling, so surely must they be, in not less a degree at all events, "in the higher intercourse and courtesies, if I may venture to use such an expression, of religious life." In short, in practice, though not in theory, he said, the whole principle of Ritualism was already accepted, and in a sort of way practised, even by the most violent of the opponents of his party. Dr. Meadows's views on these points will be found at length in a pamphlet entitled "Ritual, Religious and Secular, a Primary Law of Man's Nature," being an address, delivered in 1879, at the annual conference of a body styling itself the "Confraternity of the Holy Sacrament;" and in another pamphlet, published in 1881, on "Ritual from a Layman's Point of View." It may also be mentioned that he wrote in the *Englishman's Magazine* a series of philosophical papers on such subjects as "Life," "Death," and "Immortality."

Dr. Meadows was fortunate in being imbued with a strong love for nature and art, and he succeeded in creating for himself, in Poyle Park, Bucks., which he purchased, a residence distinguished by the beauties of both. The estate, which has been described, with illustrations, in the *Gardeners' Chronicle*, is situated about two miles from the Wraysbury Station on the London and South-Western Railway, and some four miles from Slough, and adjoins the high road from London to Bath. The mansion belongs to the time of Queen Anne, and was enlarged and restored by its owner, and furnished and decorated appropriately throughout. It stands in a large, well-wooded park, with a considerable acreage of meadow-land, and commands beautiful views of the scenery of the valley of the Colne. Dr. Meadows's ecclesiological knowledge was devoted to the beautification of the Parish Church of Poyle Park, and he presented it with a carved oak screen of admirable design. He was very fond of arboriculture and floriculture, and his estate bears evidence of his taste and judgment in these directions. Thus, not far from the Lodge gates in the Bath Road, is a reproduction of the Elizabethan garden at Hatfield House, with all the prim characteristics of that period. He had also a great interest in farming, and was the owner of a fine herd of Jersey cattle, with which he took prizes at Agricultural Shows. He was likewise President of the Horticultural Society of Colnbrook, and a Magistrate for the county of Buckingham.

Recurring to Dr. Meadows's professional work, mention must be made finally of his "Practical Treatise on Diseases of Infancy and Childhood" (in conjunction with Dr. Tanner), and of his "Prescriber's Companion," a useful hand-book of therapeutics, both of which have had a great popularity and very wide distribution.

Dr. Meadows died at his London residence, in George Street, Hanover Square, after an illness of only thirty-six hours' duration, on April 19th, 1887

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Faithfully Yours.

Benjamin Ward Richardson

BENJAMIN WARD RICHARDSON,

M.A., M.D., F.R.C.P., LL.D., F.R.S., F.S A.

DR. B. W. RICHARDSON, the well-known physician, and advocate of temperance from the physiological point of view, was born on the 31st of October, 1828, at Somerby, in Leicestershire. He is the son of the late Mr. Benjamin Richardson of that village. His education was conducted by the Rev. W. Y. Nutt, of Burrough-on-the-Hill, Leicestershire, to whom many years later he dedicated his book on the "Medical History of Diseases of the Teeth." Mr. Nutt had remarkable qualities as a teacher, and was well versed in the natural sciences, especially in astronomy and natural philosophy, and did much to awaken the interest of his pupils in such pursuits. Mrs. Richardson, who was the eldest daughter of Mr. Richard Ward, of Somerby, and who died when her son was very young, always thought the medical profession the highest and noblest that he could follow, and she confided him to Mr. Nutt, whom she knew very well, expressing a wish that his training should fit him for it. Accordingly the good man felt a great interest in young Richardson's career, and, having a happy method of preparing his pupils for professional life, the latter received an excellent classical and scientific education under his care. Dr. Richardson remembers now some very appropriate tasks that were set him to do at school, including translations of Celsus and the Latin Pharmacopœia.

Upon leaving school, Mr. Richardson was articled to Mr. Henry Hudson, a surgeon practising in Somerby, and a man of good talent, very fond of statical electricity, and extremely ingenious in fitting up electrical apparatus. There the young student gained an insight into the varied work of a country practice, and turned his attention to serious professional study, already showing a great fondness for experimental research. Mr. Hudson died in London not many years ago, and Dr. Richardson owns many pieces of electrical and other apparatus which that gentleman left to him.

From Somerby he went to Glasgow as a student at Anderson's University, which at that time was remarkably strong in its professorial staff. There he had for teachers Dr. Moses Buchanan, in Anatomy; Professor Easton (who was very learned) in Materia Medica; Professor Laurie, in Surgery; Professor Penny, in Chemistry; Professor Joseph Bell, in Botany; and Professor Andrew Anderson, in the Practice of Medicine. While Mr. Richardson was pursuing his studies at that University, the famous anatomist, Dr. Robert Knox, came to Glasgow, and tried to establish a course of anatomy there, but, meeting with only partial success, soon retired. Mr. Richardson, however, with about half-a-dozen other students, joined the class, and attended a short course of lectures on the Brain and Nervous System, to which he has always felt himself very much indebted, and he considers them to have been the finest such course he ever heard. Afterwards he attended another short course on the Physiology of the Brain, opened by George Coombe, the well-known educational scholar, and continued by Dr. William Weir, under the Henderson trust to Anderson's University.

In 1847, while studying at the St. Andrew's Square Lying-in Hospital, Glasgow, Mr. Richardson contracted a prevailing remittent fever, which was very fatal in the city during that year; and, on recovery, advised by Professor Anderson, he returned to England, and became visiting assistant to the late Mr. Thomas Brown, of Saffron Walden, in Essex. In Saffron Walden he had the advantage of a very fine local museum, and soon became connected with the Literary and Scientific Institution of the town, before which he delivered his first lecture. Mr. Richardson had been preceded at Saffron Walden by Mr. (afterwards Dr.) Forbes Winslow, and Mr. (later Dr.) Edwin Lankester, and from this circumstance a friendship ensued with them, which lasted until both Winslow and Lankester died. From there he went to Narborough, near Leicester, and, for the space of twelve months, was visiting assistant to the large firm of Messrs. Bridges, Hudson, and Beresford, practising at that place. Mr. Dudley Hudson, an excellent microscopist, whom he there became acquainted with, was the brother of the gentleman to whom he had been articled at Somerby; and, under his instruction, Mr. Richardson began the use of the microscope for the study of anatomy and of pathological conditions.

Leaving Leicestershire, he came to London in 1849, and, on the suggestion of Mr. Thomas Taylor, then Professor of Chemistry in the Middlesex Hospital, joined in practice the late Dr. Robert Willis, of Barnes, residing himself at Mortlake as long as their connection continued. In the same year, too, he went down to Glasgow, and finished his studies, which were nearly completed, taking, in 1850, the diploma of the Faculty of Physicians and Surgeons, which has since, in 1878, conferred upon him its Fellowship. Dr. Willis was a remarkable man in many ways; and Dr. Richardson feels that his own career has been very much influenced by him. Willis was the author of a treatise on the "Decrease of Disease by Civilization," in association with the late Professor Marx, of Göttingen; of a "Life of Michael Servetus," and of an original work on Urinary Diseases. He translated "The Life and Works of Harvey" (for the Sydenham Society), Rayer on "Skin Diseases," and the "Tractatus Politicus" of Spinoza. He had also been for a long time editor of the

Medical Gazette, and had just resigned his editorship to Dr. Alfred Swaine Taylor when Dr. Richardson became acquainted with him ; but he still continued to be a contributor to it. In this way Dr. Richardson also became a writer for that paper, and so continued until it was bought by the late Mr. John Churchill, and amalgamated with the *Medical Times*, under the editorship of the late Dr. Stevenson Bushnan. Thus Dr. Richardson was connected with the *Medical Times and Gazette* from the first, and continued to write for it for nearly twenty-five years, contributing to it essays on "Our Great Ones of the Past," "The Medical History of England," "Lectures on Experimental and Practical Medicine," with many other articles, making in all some thousands of columns.

During his residence at Mortlake, he competed for the Fothergillian Gold Medal with an essay on "Diseases of the Fœtus in Utero," which gained for him the coveted distinction. This work has not yet been published, but it is probable that a *précis* of it will ere long appear in print. In reading and preparing for the Fothergillian essay, Dr. Richardson often found it necessary to come up to London to consult the library of the Royal College of Surgeons, and, on his journeys in the railway train, he had the good fortune to travel frequently in the same carriage with the late Mr. Douglas Jerrold, who was then living at Putney. In this way he made the friendship of that eminent writer, and was by him introduced to the famous literary *coterie* named "Our Club," which long met at Clune's, in Covent Garden. There he fell into the circle of a number of well-known men of letters of the time, including Thackeray, Hepworth Dixon, and Dr. Doran ; and soon after he made a life-long friendship with George Cruikshank, at whose death he was present, and who named him his executor. This connection, together with the friendship of Dr. Willis, gave him a strong taste for literature as well as medicine, which taste has considerably influenced his after-career. He also became acquainted with another school of men, of classical, archæological, and scientific tastes, including the late Dr. John Lee, of Hartwell, the Rev. J. B. Reade, the microscopist, Professor Sir Richard Owen, and the late Professor Quekett.

Dr. Richardson invented, in 1848, a new double-valve inhaler for chloroform, upon which many subsequent inventions of the same kind have been formed, and this brought him the friendship of Dr. John Snow, the eminent authority on anæsthetics, a friendship which was deepened by fellow-work at the Medical Society of London, which he joined in 1850. About this time Dr. Richardson began experimental researches with *Lycoperdon giganteum*, or common puff-ball, which, on burning, produces a smoke that causes narcotism in animals. Upon investigation by Dr. Snow and Dr. Thornton Herapath, of Bristol, the narcotic was found to be carbonic oxide, an anæsthetic which is almost inodorous, which can be breathed without irritation, and which causes rapid narcotism, with convulsive action, and is too dangerous for general use, though Dr. Richardson has employed it many times for operations on the lower animals. At this period he also experimented with carbon dioxide and with ethene chloride, or Dutch liquid, a good anæsthetic, very much like chloroform in its action. The other anæsthetics which Dr. Richardson has since introduced, or been concerned in introducing, are: amyl chloride, amyl hydride, butyl chloride, butyl hydride, carbon bisulphide, ethyl bromide, ethene (olefiant gas), ethene or ethylene dichloride, methylic alcohol, methyl bromide, methyl chloride, methylic ether, methene chloride, methylal, hydramyle, methylene ether, methylic-ethylic ether, and compound anæsthetic ether.

His researches on anæsthetics led Dr. Richardson to the idea of giving euthanasia to the domestic class of the lower creation; and, in order to show that animals might be killed without pain, he set up a lethal chamber in his garden at Mortlake, to which neighbours would frequently bring animals which they wished to have killed painlessly. In 1854 he began to illustrate this mode of painless death, and from that time up to 1871 never allowed the subject to rest. In 1871 he brought it formally before the Medical Society of London in a paper entitled "Note of a Preliminary Research to Discover a Practical Method of Killing Animals without the Infliction of Pain." About this same time he made a communication to the Royal Society for the Prevention of Cruelty to Animals on the same design, and suggested a mode for killing, painlessly, dogs and cats that were wounded in the streets. From that time downward to the present he has continued the inquiry, making use of all the known anæsthetic substances, and of electricity, in order to ascertain which is the cheapest, most adaptable, and most certain in action. The information thus obtained has proved very useful, and has been put to practical service in the lethal chamber, erected from Dr. Richardson's designs, and under his superintendence, at the Dogs' Home, Battersea. The principle he has now further applied in a model slaughterhouse at Croydon, for killing animals used for food. Dr. Richardson's views on the painless extinction of life for the lower animals were given at length in a lecture, delivered before the Society of Arts, on December 18th, 1884.

Amongst Dr. Richardson's other experimental researches during his residence at Mortlake, were some which he made with oxygen, whereby he showed that after having been re-inhaled two or three times, the power of oxygen for maintaining life was destroyed, but that the power was restored by making electrical discharges through it. There also he began the treatment of pyrexia by inhalation; but his chief work at this period had reference to the separations of fibrine in the heart as a cause of death—a question concerning which he made fifteen communications to the Medical Society of London. These separations had been considered as formations after death, but he demonstrated from their structure, and from the symptoms preceding death, that they occurred before dissolution, and were the actual cause of death.

In 1852, while he was yet at Mortlake, Dr. Richardson made the acquaintance of Dr. John Rose Cormack, afterwards Sir John Cormack, and joined, with him, the Provincial Medical and Surgical Association, taking a prominent part in transforming it into the British Medical Association. When the *Provincial Medical and Surgical Journal* became the organ of the Association, under Dr. Cormack's editorship, he wrote a number of articles in it on the History of Medicine, which gained considerable reputation. He also, with Dr. Cormack, Sir John Forbes, Dr. Ogier Ward, and Dr. Patrick Stewart, founded, at Sir John Forbes's study, 2, Old Burlington Street, the Metropolitan Counties Branch of the British Medical Association. Sir John Forbes was made president, and Dr. Ward secretary; and Dr. Richardson—who himself at a later date became president—went, with others, on the council. In addition to this, he took a prominent part in the work of the late Mr. Tucker, of Berners Street, in founding the Epidemiological Society, and, through this connection, became acquainted with Dr. Benjamin Guy Babington, and Dr. McWilliam of the "Niger" expedition. In connection with this new society he now began to work at meteorology in relation to disease, and contributed to it, conjointly with the late Dr. Moffat, of Hawarden, a report on the mortality from diseases at different seasons, based on the Registrar-General's Report from the beginning, wherein the returns of all diseases were analyzed—a labour that brought Dr. Richardson into communication with the late lamented Dr. William Farr, whose friendship he retained until Dr. Farr's death, and whose last work was to award with him the Wyatt-Edgell prize of 200 guineas for an essay on "Heredity in Relation to Disease." To the Epidemiological Society he likewise contributed the first edition of the well-known paper on the "Clinical History of Scarlet Fever."

During the epidemic of cholera in London and its suburbs in 1854, a district was given to Dr. Richardson for inspection, in conjunction with Professor Owen (whose long friendship he still retains, and to whom he dedicated a book two years ago) and the late Lord William Fitzroy. He was also associated with Dr. Snow in his investigation of the theory of water as a bearer of cholera contagion, in which the famous Broad Street pump inquiry was carried out. Again, he suggested the practice, in the collapse from cholera, of injecting the peritoneum with water, in order to make up the loss; and he founded the East Surrey Cholera Society, with the object of bringing together the medical men of the district for the discussion and investigation of cases of cholera.

In 1854 Dr. Richardson graduated in medicine at St. Andrew's University (which subsequently conferred upon him the honorary degree of M.A.); and then, after a busy life at Mortlake, he determined to establish himself as a physician in London, which he did in a house quite close to his present one in Manchester Square. In 1856 he became a member of the Royal College of Physicians, and, in the same year, gained the Astley Cooper Prize of £300, by an essay on the Coagulation of the Blood, which was afterwards published in a volume. Here he announced the theory that coagulation depends on the giving off of an ammonia from the blood, an opinion which he has since somewhat modified, though not withdrawn. This essay included, in an appendix, his researches on the artificial production of rheumatism and rheumatic heart disease by the injection of lactic acid into animal bodies.

In 1855 Dr. Richardson founded the *Journal of Public Health and Sanitary Review*, which he continued for four years, when his growing practice compelled him to discontinue it. In an article on "Health and Legislation," contributed to *Good Words* (December, 1876), the concluding one of a series on "National Health," he gave an account of the difficulties he experienced in establishing this journal. "Just a quarter of a century ago," he said, "as one of the very small body of sanitary scholars, I was struggling to establish the first Journal of Public Health in this country. The effort was abortive. No publisher would touch the work, and so few subscribers would assist, or promise assistance, that I shrank from the project, for a time, in despair. At last, after three years of preliminary labour, I ventured, in 1855, to bring out the first number of the *Journal of Public Health and Sanitary Review.* Backed in the enterprise by the Council of the Epidemiological Society of London, I commenced with some advantages, and I think the journal was fairly conceived. I was kindly and ably sustained by contributors ; and, as the name of nearly every then known sanitary reformer in England was enrolled among the number, it may be some time of use for historical reference." For the title-page of this review he invented the sentence which has now passed into one of our best known proverbs, "National health is national wealth." In this journal he published an essay on the "Hygienic Treatment of Pulmonary Consumption," holding that consumptive patients should not be confined to their rooms, but should be taken out on the hills, where they could have plenty of fresh air. In this series he commenced a system of registering diseases, such as is now generally adopted, instituting observing stations from St. Mary's, Scilly, to Lerwick, in the Shetlands—about fifty in all. In one of his reports, the first cases of diphtheria in England were noted by Mr. Reid and Dr. Haffenden, of Canterbury, as occurring at the village of Ash, near Sandwich.

Dr. Richardson married, in 1857, Miss Mary J. Smith, of Mortlake, a favourite pupil of the late Sir Sterndale Bennett, and a very accomplished pianoforte player and musician, who was able also to render him great assistance with her pencil, and as an amanuensis. Two sons and one daughter have been the result of this union.

Previous to the time of his marriage he became associated with the School of Medicine, adjoining St. George's Hospital, the last of the great private schools, of which Mr. Samuel Lane was long the director, to whom succeeded Dr. Lankester, who named it the Grosvenor Place School of Medicine. There Dr. Richardson was Lecturer on Medical Jurisprudence, to which was afterwards added Public Health; and, in 1857, he became Lecturer on Physiology, a post which he held until the school closed about 1865. There also he made researches on Voltaic Narcotism, an attempt to induce narcotism locally by electric currents; and on the study of diseases by synthesis, including the synthesis of cataract, which he produced artificially after the method of Dr. Weir Mitchell, of Philadelphia, for the production of diabetic cataract, by injecting saline substances into the blood. This latter was an inquiry which awoke great interest in Professor Graham and Sir David Brewster, who both witnessed the experiments. The details were made public in Brown-Séquard's Journal.

In 1858, when the Medical Bill was before the House of Commons, for the purpose of establishing the Medical Council, it was proposed to leave the University of St. Andrew's without a representative, but, through the exertions of Dr. Richardson, who called a number of the University graduates together, the Hon. Mr. Cowper, now Lord Mount-Temple, was induced to reconsider the matter. At the same time, through the efforts of Dr. Richardson, the St. Andrew's Graduates' Association was formed, of which he has been annually elected President twenty-nine times. In 1862 he started the *Social Science Review*, which continued as a weekly journal for two years, and was then published monthly until about 1865. In this paper he published some writings in a new vein, including the often-quoted poem, "The Arsenic Wreath," as well as "Anacaona," and "Balthasar's Lament," the latter translated from the Latin, and a "Life of Ivan the Terrible." To the same period belong three plays which he wrote, named "A Day with Cromwell," "The Blacksmith of Antwerp," and "The Mask of Fame," which, together with some poems and other writings, will probably one day appear in a separate volume. Amongst the public works taken up by Dr. Richardson at this period was his attempt to establish public workshops in London, and he also took part in the work of the Association for the Promotion of Social Science. He was by this time elected an Honorary Member of the Philosophical Society of America, of the Philosophical Society of St. Andrew's, and of the Imperial Academy of Natural Sciences of Germany; a Fellow of the Pathological Society of Berlin, and a Member of the Philosophical and Statistical Society of Milan.

On the closing of the Grosvenor Place School of Medicine, Dr. Richardson began to give independent courses of lectures entitled "Experimental and Practical Medicine," which lasted several years. In these lectures he published the results of many of his researches, and introduced methylene bichloride and other anæsthetics, alluded to above, peroxide of hydrogen, ether spray for the local abolition of pain in surgical operations, styptic spray, the treatment of wounds, styptic colloid, iodized colloid, the ethylates of sodium and potassium, ozonic ether, and, after Liebreich, chloral hydrate. He also conducted some experimental researches at the time on the poisons of the spreading or contagious diseases, which resulted in the isolation of a specific poisonous product, to which he gave the name of *Septine*, and which he believes to be common to these poisons. In 1866 he sent to the Royal Society a contribution on the "Possibility of Restoring Life after Certain Forms of Apparent Death," and in the following year was elected a Fellow of the Society.

Meanwhile, about 1861-2, Dr. Richardson had begun a series of researches on nitrite of amyl. Professor Guthrie, a distinguished chemist of Edinburgh, having noticed, while distilling over this nitrite from amylic alcohol, that the inhalation of the vapour quickened his circulation, made him feel as if he had been running, and flushed his face, gave a specimen of it to Mr. Morison, who brought it to the notice of an institution which has long since died out, called the College of Dentists. The Council of the College referred the matter to Dr. Richardson, who spent many months in its investigation; and he discovered that by its action the fluid caused an extreme relaxation, first of the blood vessels, and afterwards of the muscular fibres of the body. To such an extent did the agent relax, that he found it would overcome even the tetanic spasm produced by strychnia; and, having discovered this action, he proposed its use for removing spasm in some of the extremest spasmodic diseases. Under its influence, indeed, one of the most agonizing of human maladies, *angina pectoris*, has since been so controlled that its paroxysms have been often prevented, and even tetanus or lock-jaw has been subdued by it. The first report of these investigations was made in a paper on "The Physiological Action of Nitrite of Amyl," to the British Association for the Advancement of Science, at its Newcastle meeting, and will be found reported in the *Medical Times and Gazette* of Sept. 26th, 1863. Dr. Richardson advanced the theory that the action of nitrite of amyl was immediately on the nervous system, and that, being extended to the filaments of nerves surrounding the arteries, it paralyzed the vaso-motor nerves, whereupon the heart immediately injected the vessels, causing the peculiar redness of the skin and the other phenomena. He noticed that, under this nitrite, suspended animation could be produced in frogs, and be maintained, once for nine days, with perfect after-recovery. At the next meeting of the British Association, he further reported on nitrite of amyl, and said that it might be taken as the grand type of an anti-spasmodic, as it acted precisely as if the nerve had been divided by the knife. He therefore proposed that it should be used therapeutically, for relieving spasm, as is above indicated.

This inquiry led Dr. Richardson to continuous researches, lasting up to 1871, on various substances allied to nitrite of amyl, which were reported to the British Association, and, in 1868-9, included a study of the alcohols. That study led him to conclude that the alcohols act physiologically just as nitrite of amyl does, by producing relaxation, through the vaso-motor system, on the organic muscular fibre, and that the redness of surface, and apparent heat after wine, are really evidences of a process of cooling, being due to the influx of blood to the surface. This brought him to the prolonged effect of alcohol on animals under heat and cold, and to the changes of tissue which result from its use. The full record of Dr. Richardson's observations and researches was made public by him in the now famous course of Cantor Lectures on "Alcohol," delivered at the request of the Council before the Society of Arts in 1874, and republished in a volume. This series of lectures created quite a sensation at the time, and the rooms of the Society were crowded with auditors. It was the first time that any medical man of note had spoken from experimental evidence in favour of total abstinence. "Of what physical value has alcohol been to man? Of what value is it to man?" were the questions that Dr. Richardson set himself to answer. Having discussed alcohol generally, and the alcoholic group of organic bodies with their varied actions, he addressed himself to the primary physiological action of common or ethylic alcohol on animal bodies. He showed that it had four stages of action; a primary stage of vascular excitement and exhaustion; a stage of excitement and exhaustion of the brain and spinal cord, with muscular perturbation; a stage of unbalanced reasoning power and of volition; and a stage of complete collapse of nervous function. The next question was: Is alcohol food? Can it have happened that man, by his invention, has added to nature a food? And the answer was, that it could not, by any excuse of ingenuity, be so classified; that it neither supplied matter for construction nor production of heat, but, on the contrary, militated against both. Dr. Richardson's great point was that he proved to demonstration, what others had suspected before, that, in men and animals treated by alcohol, the temperature is reduced, while degeneration of the tissues is produced, and the action of the membranes of the system is altered. "If it be really a luxury," he says, "for the heart to be lifted up by alcohol; for the blood to course more swiftly through the brain; for the thoughts to flow more vehemently; for words to come more fluently; for emotions to rise ecstatically, and for life to rush on beyond the pace set by nature, then those who enjoy the luxury must enjoy it—with the consequences." Dr. Richardson's position in brief is that alcohol is a valuable instrument in the hands of the physician, but that it cannot be taken as a food without serious damage to the physical and mental powers. Thus the physiological argument was introduced into the temperance cause, and has helped largely in the spread of temperance principles during the last dozen years. Dr. Richardson has also written "Dialogues on Drink," and "The Temperance Lesson Book;" and, in his work on the "Diseases of Modern Life," he has treated of the evils flowing from the use of alcohol. Out of the temperance movement, it may be mentioned that there grew in 1877 the British Medical Temperance Association, of which Dr. Richardson was asked, in 1880, to become president, an office which he still holds.

In the year 1861 Dr. Richardson had commenced the publication of his *Asclepiad*, intending to bring out one or two volumes a year, but he was diverted from it by editing the *Social Science Review*. The publication was, however, re-opened in 1884, and is now in its fifth volume, four parts being published during each year, consisting of practical and social papers, a biography, a series of short essays—*opuscula practica*—a pathological paper, one of original research, and one of contemporary practice and literature—the latter a department likely to grow—all from his own pen. In this work he has published some very remarkable papers, amongst which may be mentioned one on "The Mind as a Diagnostic Surface" (vol. ii.), wherein he has traced the special mental aberrations peculiar to chronic diseases—*Delirium inquietans*, *dubitans*, *sperans*, and *desperans*—showing how from morbid conditions we have aberrations of mind, which, according to the nature of the disturbing influence, will produce mental phenomena diagnostic of the disease upon which that disturbing influence rests. He has also (vol. i.) suggested the construction of a new and upper London, with terraces and gardens overhead on the housetops, and pleasant walks, and a smokeless canopy. Again (in vol. ii.) he deals with "Under London," suggesting a system of sewers within the present sewers; of sewers limited and perfect for conveying from every house its own sewage, together with the water used in the house for its own purposes—no more, no less. And, for the storm water, a system for its escape, as storm water, into the river through the existing channels, outside the true sewers, and absolutely separate and distinct from them. The plan he suggests for the direct disposal of the separated fluid is that there should be constructed at, or near to, the present outfall, or at any better place on the river, a series of vast covered docks or reservoirs, into which the fluid from the prime sewer should be pumped, and in which it should be retained for brief periods until its removal. To effect removal from the reservoirs, he suggests floating barges or tanks, which, laden with the product, should steam away with it, and carry it wherever it was destined to be borne, to the sea if it must needs be thrown adrift, or to some point of land for utilization. Two other articles of interest in vol. ii. are on "Diseases Incident to Public Life," which led Dr. Richardson to marvel "that so much risk of life, vehemence of opinion, and other uselessness of contention and labour, should agitate the world;" and on "Physiological Aptitudes for Political Labours," in which he distinguishes the different types of politicians.

Dr. Richardson has been a prominent member of the Society of Arts, and, in addition to the Cantor Lectures on "Alcohol," has delivered many interesting addresses before it, which it will be impossible here to notice ; but it may be mentioned that, on May 6th, 1880, he delivered a lecture there on "Fleuss' Diving Apparatus" —in which he has taken a great interest—whereby it is possible for a man to live for a considerable time beneath the water, or even in carbonic acid gas, sustained by an artificially produced atmosphere. Another paper, before the same Society, on March 26th, 1884, was on "Vital Steps in Sanitary Progress," in which he indicated the line for the improvement of the national health which the Society should pursue. These steps were—(1) The physical purification of the people ; (2) the radical suppression of those diseases which kill by communication of the affected with the unaffected ; (3) the promotion of a better knowledge, and of thrift, and the provision of food and drink for the masses ; (4) the encouragement of organization and unity in sanitary administration. At the Social Science Congress, held at Brighton in October, 1875, Dr. Richardson was President of the Health Department, and, in his Presidential Address, gave a sketch of an ideal "Model City of Health," happily named by him "Hygeia," which excited great interest, and gave rise to much discussion. Again, at the Health Congress at Brighton in 1881, he gave an admirable address on the "Seed-Time of Health," and in the next year, at the Sanitary Congress at Newcastle, one on "The next to Godliness." Indeed the value of his services in popularizing facts and results in sanitary science can scarcely be over-estimated. Dr. Richardson succeeded Lord Jerviswoode as Assessor for the General Council in the University Court at St. Andrew's, and held the office for over twelve years. He is Honorary Physician to the Royal Literary Fund, the Newspaper Press Fund, and the National Society of Schoolmasters. For one term, by the vote of the London School Board, he was elected a member of that body. In 1868, "in recognition of his various contributions to science and medicine," six hundred of his medical brethren and scientific friends united in presenting to him, as a testimonial, a microscope by Ross, and the sum of one thousand guineas. He was the Croonian Lecturer to the Royal Society in 1873, and has been President of the section of "Health" at the Social Science Association in 1875, President of the Sanitary Congress at Leamington in 1877, at Croydon in 1879, and at Brighton in 1881. He was made a Fellow of the Society of Antiquaries in 1877 ; Honorary Member of the Society of Hygiene, France, 1878, and of the Italian Society of Hygiene in 1879. The Honorary Degree of LL.D. was conferred upon him by the University of St. Andrew's on Febuary 15th, 1877 ; and, at the National Eisteddfod, held at Denbigh in August, 1882, he delivered an address on "Race and Life on English Soil," and, in the following year, was, with the usual ceremony, installed a "Bard."

Dr. Richardson's contributions to medical literature have taken an extensive range, but they have mainly been directed, as has been seen above, to the advancement of medical practice by the experimental method. He has turned, for healthful relaxation, to cycling, an exercise which he finds to give him agreeable refreshment. In *Longman's Magazine* for October, 1883, will be found a communication on the subject from his pen, intended to be a proof that the art of cycling confers on those who learn it a new faculty of locomotion. He says: "The greatest benefit hitherto that has sprung from the art of cycling has been the good it has effected on the health of those who have practised the art. I really know of nothing that has been so good for health. Men and women who, ten or fifteen years ago, were immured from one year's end to another in close towns, and who had little experience of country air and country landscapes, are now seen rushing by thousands out of the towns into the country, and enjoying all the natural advantages resultant from so important a change. By this course they have also made their own houses in towns healthier, because they have left the confined intra-mural spaces in which they existed to be ventilated and recharged with fresher, if not with fresh, air. They have learned how to ventilate their own bodies, how to imbibe an air free of injurious vapours and particles, while they have developed a freedom and strength of limb, and a mental pleasure and escape from care, which have been useful alike to mind and body. In addition, they have been gainers of many good and serviceable mental qualities. The little bit of risk or danger which attends the expedition has called up courage, attention, decision, and presence of mind; while the desire to perform some predetermined task has taught them how to keep up endurance. The true cockney has been quite transformed by the art of cycling, and in a very few years will be unknown even in Cockaigne."

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"The Registration of Disease;" "Seasons and Disease;" "Surgical Meteorology;" "Health and Occupation;" "Health and Education;" "Woman as a Sanitary Reformer;" "A Model City;" "Hygienics of Water Supply;" "Diseases of Over-worked Men;" "The Mosaic Sanitary Code and Vitality of the Jews;" "The Vitality of Nations;" "Upper and Lower London;" "Winter Palaces and Camps of Health;' "For and against Tobacco;" and many other communications of similar character.

REPORTS AND EVIDENCES.

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PERIODICAL WORKS.

"Journal of Public Health and Sanitary Review" (1855-88); "Social Science Review" (1861-66); "Asclepiad," a Book of Original Research in the Science, Art, and Literature of Medicine (1861, one volume, and 1884-87, sixteen quarterly parts—eight volumes).

PUBLISHED WORKS IN VOLUMES.

"The Coagulation of the Blood" (Astley Cooper Prize Essay); "The Medical History of Diseases of the Teeth;" "Discourses on Practical Physic;" "The Field of Disease;" "Diseases of Modern Life;" "A Ministry of Health;" "Health and Life;" "A Review of the Life and Works of Edward Chadwick, C.B.," two volumes; "The Commonhealth;" "The Temperance Lesson Book;" "Dialogues on Drink;" "Drink and Strong Drink;" "The Guild of Good Life;" "Household Health;" "Cantor Lectures on Alcohol."

INVENTIONS IN MEDICAL SCIENCE AND ART.

"An Inhaler for Chloroform" (1848-9); "Hæmostatic Scissors;" "A Spray Tube and Apparatus for Ether Spray;" "A Tubular Bag for applying Cold Water in current to the Body;" "A Painless Cutting Knife;" "Apparatus for Embalming;" "Apparatus and Tubular Needle for Transfusion;"

"A Double-Acting Bellows for Artificial Respiration;" "A Cutting Needle for Treatment of Nævus;" "The Sphygmophone;" "Improvements in the Sphygmograph and Method of Standard Measurement for Pulse Readings;" "A Mask for Workers in Dusts;" "Lethal Chamber for Painless Extinction of the Life of the Lower Animals;" "A Medical-Meteorological Cabinet;" "A Double Caoutchouc Stethoscope."

MISCELLANEOUS CONTRIBUTIONS TO MEDICAL AND GENERAL LITERATURE.

"Biographies of Illustrious Medical Men" (20 in number); "The Medical History of England" (12 chapters); "Name and Race on English Soil;" "The Life of Ivan the Terrible;" "The first Electric Line, and Life of Stephen Gray, F.R.S.;" "The Life of Joseph Priestley, LL.D., F.R.S.;" "Toxicopolis;" "The Thames;" "Mandragora;" "Plays, Poems, and Songs."

CONTRIBUTIONS TO PHYSIOLOGY AND PATHOLOGY.

"Ammonia in Transfusion;" Pathology of Pectous Changes;" "Influence of Vapours on the Minute Circulation;" "Death by Drowning and Cold;" "Death by Chloroform, and other Narcotic Vapours;" "Researches on Resuscitation;" "On Muscular Irritability after Systemic Death" (Croonian Lecture); "Vital Properties of Carbonic Acid;" "Researches with the great Electric Coil of the Royal Polytechnic Institution;" "Death by Lightning and Electricity;" "The Condensing Power of the Lungs;" "Effects of Extreme Cold on Nervous Functions;" "Artificial Respiration;" "Preservation of Animal Substances;" "Life in Factitious Atmospheres."

ARTHUR ERNEST SANSOM,

M.D., F.R.C.P.

DR. SANSOM was born at Corsham, a small country town in Wiltshire, of which he has many pleasant recollections, for there he spent his boyhood, and first evinced his fondness for the pursuits which he has since pursued so diligently. Corsham is notable for the antiquity of its customs, and the longevity of its inhabitants. Dr. Sansom remembers that, in his early youth, the favourite walk was to the old coach road which ran through the village of Pickwick, the northern limit of Corsham, to see the London coach go by. By this road no doubt Charles Dickens frequently went to Bath, and from the name of the village probably obtained a title for the "Pickwick Papers." Corsham held to many of the feudal customs, the curfew, for example, being rung at 8 p.m.

There, in the calm quiet of country life, young Sansom passed his childhood and boyhood. His father, a retired farmer—a gentleman of the old school, who wore breeches and stockings, or gaiters, and who never in his life had donned a pair of trowsers; his mother, a lineal descendant of the celebrated divine, Dr. Isaac Barrow. There was a large school at Corsham, well managed by Mr. Strong, and there he attended, and was for a long time the "head boy." His tastes early turned towards chemistry, and he began, so far as he recollects, by saving up his pocket-money to buy a "Chemical Cabinet."

At the age of fourteen he was sent to Queenwood College, near Stockbridge, Hants, where his tastes for science were cultivated under high auspices. Professor Tyndall lectured there on "Natural Philosophy," and also taught Euclid, with his well-known power of giving interest to the driest subject. The teacher of Systematic Chemistry was Dr. Debus, afterwards examiner in that subject at the University of London, and there were all the advantages of an excellent and well-appointed laboratory. It happened that at that period young Sansom was the only boy in the school who wished to learn Greek. He was aware that in order to pass the Matriculation Examination of the London University he must know his Greeek subject, and that this would be impossible without a re-arrangement; so he got his father to let him leave Queenwood, and was placed under the private tuition of Mr. John Wilson, M.A., of Chippenham, to whose personal conscientious care he owes much. There he was associated with the brothers of Mr. W. Crookes, F.R.S., and with them and the members of their family he maintained a valued friendship. He passed his Matriculation Examination in the first division, and, directly afterwards, being then only sixteen years of age, entered at King's College, London. There he obtained a Warneford Scholarship and six prizes. He became Clinical Clerk to the late Dr. Todd, with whom he came into very close relation, for he prepared the notes for many of the clinical lectures delivered by that well-known master. He filled all the usual in-patient and out-patient appointments open to students, and then, as he was still too young to be eligible for examination for his diplomas, went to Paris, where he attended the practice at the Hôpital St. Louis, and also learned, under Piorry, the methods of physical examination, which were so well taught by that able, though eccentric master.

He returned from Paris in 1859, and, in the same year, passed the College of Surgeons, the Apothecaries' Hall, and the examination for the degree of M.B. in the University of London. During the same period he held the offices, consecutively, of Physician-Accoucheur's Assistant and House Physician at King's College Hospital. The work of examinations, together with the practical duties at the Hospital, became overmuch, and a severe attack of jaundice ensued, but a good recovery was made after no long time.

About this period he became deeply interested in the subject of anæsthetics, and gradually accumulated original experimental data, and practical observations, which he published under the title of "Chloroform: its Action and Administration; a Handbook," in 1865. This work was very favourably received both at home and abroad. In a review of the whole subject of Anæsthesia, with critical notices of seven treatises, in the *American Journal of Medical Sciences*, for January, 1867, the writer says:—"The work of Dr. Sansom may be characterized as most excellent. Written not alone from a theoretical point of view, but showing very considerable experimental study, and an intimate clinical acquaintance with the administration of these remedies, passing concisely over the whole ground, giving the latest information upon every point, it is just the work for the student and practitioner. The author may rest assured that, although in his preface he objects to the hackneyed expression of 'endeavouring to supply a want,' this is just what he has done—supplied, and well supplied, a want, for no such book existed before in our language. That he has expended much labour in its compilation is evident throughout, and we are certain that he has succeeded in his endeavours 'to combine the characteristics of truth and brevity.'" This work is full of sound advice on the subject of chloroform, both as to its administration, and as to the best modes of treating dangerous symptoms arising during its use, "It is," as the *Dublin Quarterly Journal of Medical Science* observed, "a safe guide on the subject of which it treats."

Dr. Sansom has never ceased to insist on the necessity of care in the administration of chloroform, and on the importance of a due dilution with air, inasmuch as the agent is capable of inducing paralysis of the heart. He investigated the action of mixtures of volatile anæsthetics, and, in 1869, in a paper read before the Obstetrical Society on "Anæsthetics in Obstetric Practice," gave a summary of a considerable number of experimental observations, which showed that pure chloroform poured upon lint could give off at ordinary temperatures a proportion of vapour, varying, according to the amount poured out at a time, from 14.9 to 4.3 per cent. In fact, a very dangerous proportion might thus be administered, He investigated the effects of mixtures of chloroform with ether, and with absolute alcohol, and concluded that the latter, mixed with chloroform, acts in part as a diluting element, but chiefly by restraining volatilization, favours admixture with air; for practical purposes it may be considered that in equal volumes the strength of the resultant atmosphere is reduced one half. His conclusions were thus summarized :—(1) That the best anæsthetic mixture is one of chloroform and absolute alcohol. (2) That the principal value of the alcohol is to retard the too rapid evaporation of the chloroform. (3) That, by means of this mixture, the regulation of the strength of the atmosphere inhaled is to be effected with sufficient precision for all practical purposes. (4) That the anæsthetic mixture to be recommended for use in obstetric practice should consist of one part of chloroform to two of absolute alcohol. Amongst other original work, Dr. Sansom introduced tetrachloride of carbon as an anæsthetic.

After the death of Dr. Snow, he acted as Chloroformist to Sir William Fergusson, and, in that capacity, accompanied him for some considerable period to nearly all his operations. A desire, however, for more active and varied work had taken possession of him, and he relinquished the post in question to enter upon general practice. In this sphere of medical labour he continued to work until 1867, when, in addition to the degree of M.D. London, which he took in 1866, he obtained the Membership of the Royal College of Physicians; and, abandoning general practice, was elected Physician to the Royal Hospital for Diseases of the Chest in the City-road.

We believe that Dr. Sansom was the first member of the medical profession in this country to bring before the notice of his fellows the important researches of Pasteur—which originally bore upon the phenomena of fermentation—with especial reference to their significance as regards the causation of communicable disease. He read several papers on the subject before the Medical Society of London, where he met with very vigorous opposition. Indeed there was scarcely a single auditor, in the first instance, who was found to agree with him, or to accept the views he enunciated. Any one who then espoused what is known as the "Germ Theory" of disease was set down as an enthusiast. But enthusiasm on the side of truth often works wonders, and in these days the "Germ Theory" counts in the ranks of its supporters by far the larger number of the scientific thinkers in the Profession. The splendid results of Listerian Surgery, and the rapidly-increasing use of antiseptics in medicine, especially in the treatment of diseases of the infectious type, as is evinced almost weekly by reports, discussions, and papers in the medical journals of all countries, are an honourable testimony to the clear-sightedness and perseverance of Dr. Sansom, who, in spite of opposition, and almost of ridicule, persisted in claiming attention for this important subject.

So far back as 1866 he wrote a small work on "Cholera," in which he said, "The germ of infectious disease does not, like an ordinary poison, enter the body to be ejected or to remain in no increased quantity, but it grows with that it feeds on ; its progeny possesses all the attributes of the parent cell—the few become many, and are constantly being thrown out of the body to excite a new morbid action in fresh individuals with whom they come into relation. This zymë or ferment is specific and peculiar in every infectious disease. There is one zymë of small-pox, another of fever, a third of cholera, and so on." It is unnecessary to inquire how far these observations have stood the tests of time and of the elaborate investigations of recent years.

It was at an early period of the discussion of the "Germ Theory" that Dr. Sansom urged that our conception of a "germ" should be two-fold. There must be a central portion, solid, particulate, living, capable of multiplication, and a peripheral zone, consisting of the execretions of this living thing, and this must be conceived as soluble and in many cases toxic. This view is thoroughly endorsed by the researches of Gautier and others, which have shown that microbes produce and throw off soluble alkaloidal substances to which the name of "ptomaïnes" has been given.

Dr. Sansom has contributed papers on the subject to the *Medical Times and Gazette* and the *Medical Press and Circular.* He also made a series of observations on disinfectants, especially carbolic acid, in the hope that the principle of disinfection might find its application to the living body in the case of infectious diseases. In the course of these observations, his previous chemical training stood him in good stead ; and he produced the series of sulpho-carbolates, which he introduced to the notice of the Royal Medico-Chirurgical Society in 1869. The results of therapeutic methods and experiments are, however, more conspicuously discernible within the domain of Surgery than in that of Medicine ; and adherence to the "Germ Theory," which was very slow during the early process of analogical experimentation, and investigation into the complex phenomena of disease, was swift and widespread as the brilliant results of Lister became more and more evident in Surgical Practice.

It had always been Dr. Sansom's aim to adapt the "Germ Theory" to the every-day work of the practical physician. He therefore began the adoption of the antiseptic system in medical practice, and a paper by him on "The Sulpho-carbolates and the Antiseptic Method in Medicine," appeared in the *British Medical Journal* in 1870. In 1871 he published further researches on this question, in the form of a book, entitled, "The Antiseptic System: a Treatise on Carbolic Acid and its Compounds, with Inquiries into the Germ Theories of Fermentation, Putrefaction, and Infection; the Theory and Practice of Disinfection; and the Practical Applications of Antiseptics, especially in Medicine and Surgery." This work, the result of much thought, research, and labour, was but coldly received, and even yet the "Germ-theorists" were dubbed "visionaries." In this essay Dr. Sansom investigated the claims of carbolic acid and the carbolates to a prominent place among disinfectants, and he also addressed himself to the great questions respecting putrefactive processes.

Since the book was written, the progress of investigation has been rapid; and it is scarcely too much to say that the results obtained have been almost uniformly in favour of the chief doctrines inculcated therein. Passing from general theories to particular applications thereof, Dr. Sansom subsequently wrote concerning the antiseptic treatment of smallpox (*British Medical Journal*, Nov. 25th, 1871; *Practitioner*, June, 1871), and also advocated the theory of the septic origin of Pulmonary Phthisis, which has since received such ample support. ("On Inflammation of the Lungs as a Cause of Consumption."—*Medical Times and Gazette*, 1872).

In the meantime (1869) Dr. Sansom had been elected Physician to the North-Eastern Hospital for Children, in the welfare of which he has ever since taken a warm interest. This most excellent institution, which originated in the self-denying efforts of two benevolent ladies, was at first located in a dwelling-house in the Hackney Road. It has since become one of the largest as well as one of the best appointed and most efficiently managed Hospitals for children in the Metropolis. After more than seventeen years of service he was made Consulting Physician to the Hospital, and the Committee and Governors conferred on him the compliment of election as Vice-President of the Institution. In 1874 Dr. Sansom was also elected Assistant Physician to the London Hospital. In 1878 he was made a Fellow of the Royal College of Physicians of London, and, in 1881, became Physician to the London Hospital, which post, with that of Lecturer on Medical Jurisprudence and Public Health at the London Hospital Medical College, he at present holds, it need scarcely be said, with the respect and good wishes of the Governors, the Patients, and his Colleagues.

In 1883 he was chosen Lettsomian Lecturer to the Medical Society of London. His lectures on the "Treatment of some of the forms of Valvular Disease of the Heart" were published by request of the Society. He is an Honorary Fellow of King's College, London, a Fellow and Member of the Council of the Royal Medical and Chirurgical Society, and of the Medical Society of London, and an Honorary Fellow of the Medical Society of New York.

Since 1874, Dr. Sansom's original work has been chiefly clinical and therapeutical. His book on "The Physical Diagnosis of Diseases of the Heart," has now reached its third edition, and his "Lettsomian Lectures" on the Treatment of Valvular Disease of the Heart its second edition. The appended bibliography will show that his pen has been prolific in many directions.

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faithy yours
Wm. Strange
Presᵗ Brit Med Assn

WILLIAM STRANGE,

M.D., Ext. L.R.C.P., L.R.C.S.

DR. WILLIAM STRANGE, of Worcester, Vice-President of the British Medical Association, is a member of an old Buckinghamshire family, which has also representative branches in Norfolk and Berkshire. He was born in 1816 at Shalstone, Bucks, but during his early years, the family removed to Astwell House, near Brackley, Northamptonshire. In this county he received his early education, and, on selecting the Medical Profession as the field of his future career, he followed the custom of that day, and became apprentice to a London practitioner near the Borough Schools. He had selected Guy's as his place of Medical Education, and was about to enter there, when the solicitations of an old schoolfellow induced him to reconsider his determination, a course which resulted in his adoption of Edinburgh as an Alma Mater. In this he was fortunate, for, at the period of which we write, the teaching of the Edinburgh Schools, both University and extra-mural, was perhaps at its highest point. Besides the greater facility afforded by the Scottish Universities at that period, the one at Edinburgh provided such means for the cultivation of general literature and science as were not easily obtainable by the London student. Thus, in addition to the ordinary Medical classes, Mr. Strange had the advantage of attending those on Moral and Physical Philosophy, then taught by Chalmers, Wilson, and Thomson. At this time, moreover, Alison, Hope, Christison, and Hamilton adorned the University Schools, while Knox, John Read, and Fergusson maintained a friendly rivalry at the Surgeon's Hall. Mr. Strange took the licence of the Royal College of Surgeons of Edinburgh in 1838.

He was fortunate in his associates and fellows in that city; for 1839, the year in which he took his degree, also hailed as his fellow graduates, W. B. Carpenter, Edward Forbes, Hughes Bennett, and others, whose impress remains indelibly stamped upon the records of science and research. Carpenter and Strange alone competed in that year for the University prize awarded for the best Philosophical Essay, and we do no discredit to Dr. Strange when we state that Carpenter, who had already lectured on Physiology at Bristol, secured it. A local training, however, is not calculated to bestow that practical method and breadth of thought which the good men in all ages have coveted; and accordingly Dr. Strange went over to Paris in 1839, where he became a pupil of Andral and Chomel, of Magendie and Milne-Edwardes. He was one of the early members of the Paris Medical Society, where he again fell in with Hughes Bennett, Henry Bennett, and others of his former Edinburgh associates.

His return to England brought him into contact with Dr. Lyon Playfair, and he was led to turn his attention to Sanitary matters, which were then coming to the front. He assisted the Commission of that date in amassing information as to the condition of the great towns of Lancashire, and his evidence will be found in the Report of the Health of Towns Commission, whose researches laid the foundation of future Sanitary legislation. In 1845 he took the extra-urban licence of the Royal College of Physicians of London, and, in the following year, published the results of his observations on the sanitation of centres of population, in "An Address to the Middle and Working Classes on the Prevention of Excessive Sickness and Mortality in the Large Towns." He was thus one of the earliest writers on, and pioneers of, our Sanitary matters, and the legislation thereon.

The Government of that day, however, shrank timidly from the responsibility of applying its theoretical principles to a practical test, and, as no permanent opening for work in sanitary science at the time presented itself, Dr. Strange once more directed his attention to the curative branch of the medical art. For a few years he remained in practice at Bridgnorth, in Shropshire, but, eager for a larger sphere of action, he removed to Worcester in 1854.

Worcester, the birth-place of the British Medical Association, possessed at that time an unusual array of medical and surgical talent. Dr. Malden, well known in the Midland Counties as a shrewd observer both of diseases and of men, had also attained a reputation as a witty, courteous, and polished gentleman. Sir Charles (then Dr.) Hastings was working at the Association, which he had founded some years before, and Mr. Carden had a reputation as a skilful surgeon, which extended far beyond the limits of his own county. Dr. Strange, therefore, had to bide his time, and it was not until 1861 that he obtained the post of Physician to the County Hospital, which he has now held for more than twenty-five years. By the death of Dr. Philip Williams, a former secretary of the British Medical Association, in 1872, Dr. Strange became, and remains, Senior Physician to the institution.

Resisting the temptation which attracts the energetic minds of many provincial professional men, to embark in an active career of political or municipal duties, Dr. Strange threw all his working power into the practical performance and higher study of his profession. Each of the excellent medical charities of the city—the Dispensary, to which he was Physician for twelve years, and which still retains him as its Consulting Physician, the Infirmary, the City and County Orphan Asylum, and the County Prison—has by turns had the advantage of his services and profited by his counsels.

On the death of Sir Charles Hastings, in 1866, Dr. Strange stepped forward to the front rank of the profession in the Midland Counties; and, at the death of Mr. Carden, in 1872, was duly recognized as the leading physician of the county of Worcester.

Dr. Strange has for years past identified himself with every movement which could tend to raise the status or secure the efficiency of his medical brethren. On the decease of Sir Charles Hastings, that gentleman's library, which contained one of the best collections of medical classics in the kingdom, was presented by his son, Mr. George W. Hastings, and his daughter, to the practitioners of the county of Worcester. To utilize this munificent gift in the way it deserved, Dr. Strange worked energetically, and founded the Worcestershire Medical Society, acting as its Honorary Secretary and Librarian for twelve years, and, by his assiduity and courtesy, he secured for it a great success. This society has since merged its meetings into those of the Worcestershire and Herefordshire Branch of the British Medical Association, whose place it had hitherto somewhat usurped. It is curious that Sir Charles Hastings never made any effort to establish a branch of the Association, which was his own child, in his native city; in fact Sir Charles's efforts were so much absorbed in the welfare of the parent Association, that he seems not to have given much heed to that of its branches. While on the subject of the British Medical Association, with which the name of Dr. Strange will henceforth be associated on account of his presidency at the Jubilee Meeting, we may say that the desire of the Association to hold the Jubilee at the place of its birth, rational though it was, came upon the local profession as somewhat of a surprise. Having, as we have said, no local branch, and no other organization whereby to utilize the labours of those who might be willing to assist in preparing for the great event, the profession in Worcester was placed somewhat at a disadvantage.

To form a Branch, however, and to get together the pick of the profession within the circuit of the two counties, was a task which only required an energetic mind, and, by the time at which the Committee of Council had definitely fixed on Worcester as the scene of the Jubilee, the arrangements were well in hand; the money asked for was subscribed, and a committee formed, to whose energy and zeal the successful termination of the meeting is to be attributed. It must not be forgotten, however, how very heavily the work of organizing the meeting must have fallen upon the shoulders of Dr. Strange; and it is no marvel, therefore, that the recognition of his services, coupled with the personal esteem in which he was held, caused him to be elected to the honourable position of President. With him was associated an excellent reception committee, but his principal assistants were Dr. Crowe, of Worcester, and Mr. Moore, of Hereford, as honorary secretaries, and Mr. J. Randle Buck, of Worcester, to whose excellent and self-denying exertions must be attributed the unprecedented success of the Annual Museum.

The "Worcester Week" will long linger in the memories of many, and common consent seems to point it out as one of the most successful of a long line of successful meetings. Dr. Strange's courtesy and general demeanour as president on the occasion, and his excellent and thoughtful address, won golden opinions on all hands. He presented strongly the picture of the high-minded provincial physician, conscious of the nobility of his profession, and earnest in the support of its dignity and its *morale*. It would indeed be a sad day, not only for the profession, but for the public, if that high standpoint of professional equity and rectitude ever gave place to a restless jealousy or a selfish want of professional courtesy and brotherhood.

The activity of Dr. Strange's year of presidency was by no means exhausted in the labours of the "Worcester Week." He threw himself ardently into the administrative work of the Association, in which there were at that time serious defects. It was at Worcester that a motion, initiated by Mr. Hugh Ker, for the reform of the governing council, was carried. The dual control of its affairs, firstly by a committee of council, partially self-elected, and secondly by a general council, which met only once a year at the place of the annual meeting, was found to give rise to too much friction and jealousy to be any longer suited to an association which was moving on with giant strides. Dr. Strange, in his opening address, made allusion to the want of more direct representation of the branches in the Council of the Association, and the applause which his remarks elicited showed that the time had come for a radical change in its government.

The new constitution was worked out during Dr. Strange's presidency, and he had the pleasure of moving its adoption at a meeting of the Association held at Birmingham. The new rules were confirmed at the succeeding annual meeting at Liverpool, and are found to work well for the Association, and to the greater satisfaction of the individual Branches.

Although not a voluminous writer, Dr. Strange, as he stated in his opening address in 1882, has been in the habit of "solacing an anxious life with occasional literary relaxation." He contributed articles to the early numbers of the "Cornhill Magazine," and to the "Gentleman's Magazine," on subjects of medico-scientific interest. Amongst these was a paper in the "Cornhill" on "Pestilences, Ancient and Modern," giving a *resumé* of their history from the days of the Assyrians to the present time. Dr. Strange has never ceased to interest himself in Sanitary Science. Besides the Address before referred to, published so far back as 1846, he followed up the subject with two works, "The Seven Sources of Health," in 1864, and "The Restoration of Health," in 1865, which enjoyed an extensive sale at the time as popular guides to personal Sanitation. Dr. Strange has also contributed many papers to the Medical Journals, of which "The Etiology of Enteric Fever" (*Medical Times* *and Gazette*, 1874), and his Address on the same subject in the Section of Public Medicine at Ryde, show that his thoughts have never been diverted from the Science of Public Medicine. "The Causes of Infantile Mortality" (*Sanitary Record*, 1880), and "Puerperal Septicæmia" (*Lancet*, 1878), of which latter Dr. Strange has had a large consulting experience, testify to the same habit of mind. His sanitary knowledge finally met with its reward, when, in 1872, the appointment of Medical Officers of Health was made compulsory in both Urban and Rural Districts, and Dr. Strange was at once appointed by both Authorities to fill that office. He has since served the office of President of the Birmingham and Midland Association of Medical Officers of Health.

As connected with that habit of mind which looks towards the prevention of disease and suffering, Dr. Strange has actively contributed his efforts for the benefit of the medical and other charities of Worcester. He has on three occasions suggested and aided in the enlargement and improvement of the Worcester Infirmary, to which institution he has devoted a great part of his energies for over a quarter of a century. His representations for the better management of this fine institution have always been listened to by the Executive Committee, and have generally been carried into effect.

On the occasion of the conversion of the old charitable Dispensary of Worcester into a Provident Medical Institution, some years ago, Dr. Strange evinced the same broad and catholic spirit which has always marked his conduct. Knowing the jealousy and ill will engendered in some other towns by the monopoly of the benefits of these institutions by one or two members of the profession, he urged upon the governing body the desirability of obtaining the services of all the younger medical men who might choose to join the Dispensary. Accordingly, there are no less than eight medical officers, each receiving a substantial payment according to the work done. There is, consequently, the greatest harmony between these gentlemen, while the senior practitioners of the city are relieved from a class of work which they could no longer undertake with satisfaction.

As might be expected from the foregoing summary of his career, Dr. Strange deservedly enjoys the fullest confidence of a large circle of Medical brethren, because of his fair and honourable conduct in all the relations of life. He has always been of opinion that the right course by which a consultant should aim at popularity is through the confidence and good-will of his fellow-practitioners, and not through the ephemeral applause of the multitude.

Dr. Strange married, early in life, a daughter of Major Macpherson, of Ayr, by whom he has four children living. His eldest son is Medical Superintendent of the Salop and Montgomery Counties' Lunatic Asylum, and a representative member of the Council of the British Medical Association.

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Faithfully yours
C Meymott Tidy

CHARLES MEYMOTT TIDY,

M.B., C.M., M.R.C.S., F.C.S.

CHARLES MEYMOTT TIDY was born at Hackney, in the year 1843. His education was begun and principally carried on at home, by his father, but for a time he also attended the Church of England School at Clapton. In 1860 he became a pupil of the late Dr. Letheby, the eminent scientific chemist, immortalized in that inimitable work, "The Water Babies." With this gentleman he remained for four years, and in after life they were frequently associated together. In October of the same year (1860) he entered as a student at the London Hospital, and, in April, 1861, was elected to the post of Assistant Demonstrator of Chemistry at the College, a fact which shows that he was distinguished by considerable industry and application. Shortly afterwards he was appointed to assist Dr. Letheby in his private laboratory, doubtless a most valuable experience.

In 1864 he became a Member of the Royal College of Surgeons and a Licentiate of the Apothecaries' Hall; in the next year he matriculated at the University of Aberdeen, and, after due residence, took the degrees of Bachelor of Medicine and of Master in Surgery, "with highest honours." In 1866 he was elected a Fellow of the Chemical Society, and the same year saw him appointed joint occupier of the Chair of Chemistry at the London Hospital with his friend and former teacher, Dr. Letheby. This appointment gave Dr. Tidy the opportunity for which he had always wished.

It had been his constant ambition to devote himself to the purely scientific part of Medicine, that part in fact represented by Chemistry; and it is owing to his steadfast fidelity to his own particular department, that we have to record several advances in Medical and Physiological Chemistry, particularly in the Chemistry of the Urine and the Blood.

In 1868 he was appointed to the post of Lecturer on Forensic Medicine and Public Health at the London Hospital College, and in the same year he became Deputy Medical Officer of Health and Public Analyst to the City of London, as assistant to Dr. Letheby.

The works of Dr. Tidy bear chiefly upon the subject named—Medical and Physiological Chemistry. He has made a series of Annual Reports on the Quantity and Quality of the Water supplied to London, and latterly has expressed the opinion that on the whole the supply may be deemed satisfactory, a very consoling assurance for the inhabitants of the Metropolis, but one which should not have the effect of making them fancy themselves secure for ever, the time for watchfulness having by no means passed. In 1872 Dr. Tidy began Reports on the Sanitary Condition of certain Islington Parishes, to which he had been appointed Medical Officer of Health. A year later he published a paper on "Vitiated Air," containing the results of his careful and elaborate experiments.

In 1876 Dr. Tidy succeeded Dr. Letheby in the Chair of Chemistry at the London Hospital. In the following year he returned to the London Water Supply, and dealt with the subject thoroughly and exhaustively. The attention he has paid to the subject of water analysis, and the best sources of supply, has been long and constant, and his general conclusions on the subject will appear below.

Other important work, however, lay before him, and, in 1877, appeared "Forensic Medicine and Toxicology," written with the co-operation of Dr. Bathurst Woodman. His energetic pen also produced, in 1878, "A Handbook of Modern Chemistry, Inorganic and Organic." This work is an evidence of his thoroughness, carefulness, and accuracy as a writer. It is invaluable to all scientific medical men, and is alone quite sufficient to establish for him a high reputation. Mention should also be made of his investigations "On Anæsthetics," which appeared in 1879, and of his extensive work on "Legal Medicine."

In addition to these larger works, Dr. Tidy has written many pamphlets and read many papers. One of his most valuable essays will be found in the *Journal of the Chemical Society*, of January, 1879, on the "Processes for Determining the Organic Purity of Potable Waters." The "Oxygen Process," by means of a solution of potassic permanganate, was that used by Dr. Letheby, and has since been followed by Dr. Tidy. It was first suggested by Professor Forchammer, of Copenhagen, in 1850, and afterwards tried and approved by Condy, Dr. Miller, Dr. Woods and Mr. Harcourt. The exact process used by Dr. Letheby and somewhat improved by Dr. Tidy, will be found in the paper alluded to. Dr. Tidy is convinced that by this means we obtain data of great value by which to judge the nature of organic impurity in water. It furnishes us with exact information as to the relative quantites of putrescent and easily oxidizable matter, as well as of non-putrescent and less easily oxidizable matter; and, what is of great importance, the most pernicious organic matters are oxidized by the process. Dr. Tidy, however, strongly affirms that all classifications of water founded on one single factor in the analysis are to be accepted with great caution, although that factor be even the admittedly important one of the organic matter present and its comparative quantity. "That some," he says, "from a determination of the ammonia, the albuminoid ammonia, and the chlorine (however valuable the determination of these may be), can pronounce a water good or bad surprises me much ; such details I confess seeming to me to have been chosen with far greater regard to the analyst's time than to the needs of the inquiry. To judge a water justly we must judge it as a whole, and it is impossible to judge it as a whole if the details have not been worked out. Nothing, to my mind, can justify a mere cursory examination of a water, when, with all the facts before us, it is often hard enough to make a righteous judgment. I have said this much because I wish it to be understood that I object to any classification founded on any one constituent of a water." Dr. Tidy considers the ammonia process of water analysis to be singularly inconsistent in its results, and to allow of no sufficiently large scale whereby the finer grades of purity or impurity can be recognized and classified ; the difficulty of the combustion process, he says, is that it is necessary to evaporate the water to dryness, while the oxygen process is conducted with the original water and without the application of heat, and gives results of great consistency and extreme delicacy.

In a valuable paper on " River Water," published in the *Journal of the Chemical Society*, in May, 1880, Dr. Tidy drew attention to the analytical details of the supply, to the various impurities to which river water is subject, and to the means whereby purity is maintained by nature or effected by art, and considered finally how far river water is suitable for drinking purposes. He contended that, if sewage be discharged into running water, the organic impurities will, after a flow of a few miles, be entirely destroyed or got rid of, the water once again assuming its normal condition of purity. The power of self purification depends upon the subsidence of the suspended impurities brought down by the sewage, on the presence of animal life in the river, the fish acting as scavengers, and on the oxidation of the organic matter. This power Dr. Tidy illustrated by instancing the river Soar, which at Leicester is black with sewage, while at Loughborough, thirteen miles lower down, it is perfectly clear ; the Irwell at Manchester is polluted with every kind of impurity, while at Warrington, nine miles away, the offensive character of the stream has disappeared ; and the Skerne receives the sewage of Darlington, and leaves the Tees, into which it flows, free from pollution. The fact is also proved by the analysis of the waters of other rivers. Dr. Tidy proceeds to infer from the remarkable power of self-purification in flowing water, and from the fact that the death-rates of well-towns and river-towns are practically alike, that river water may be used with perfect safety for drinking purposes. His conclusions on the subject are summed up in these words :— " When sewage is discharged into running water, provided the primary dilution of the sewage with pure water be sufficient, after the run of a few miles, the precise distance of travel being dependent on several conditions, the removal of the whole of the organic impurity will be effected. Whatever may be the actual cause of certain diseases, *i.e.* whether germs or chemical poisons, the *materies morbi*, which finds its way into the river at the sewage outfall, is destroyed, together with the organic impurity, after a certain flow."

On April 14th, 1886, Dr. Tidy delivered an address before the Society of Arts, on the "Treatment of Sewage," in which he expressed his individual views upon the subject, approaching it, as he said, "from the position of judge, and not from the position of advocate." To throw sewage into a river, Dr. Tidy remarks, is to put off the nuisance from ourselves to our neighbours. "The organic matter sinks to the bottom of the water, and there undergoes putrefactive decomposition, until, after a time, the gases developed are sufficient to render this material specifically lighter than the water; then it comes up, gives off its gases, becomes heavier, goes down again to putrefy once more, with other matters added to it, then comes up again and gives off other gases." Dr. Tidy has not a very high opinion of irrigation, pure and simple, as a remedy for the evil; he thinks the practical difficulties too great, and the hygienic aspect of the question unsatisfactory. "How shall we deal with our sewage? There is no one simple answer to be given to that question. The adviser must, if he wishes to do justice, sink his hobby. He must be prepared to find conditions under which he would advise irrigation, and conditions under which he would advise precipitation." Dr. Tidy's own experience leads him to prefer, "by a very long way indeed," a combination of a precipitation and an irrigation scheme, because "its efficient working is independent of weather," and, "if you have sufficiently large works, any emergency of quantity can be met." He speaks very highly of the use of lime and sulphate of alumina for the purpose of precipitation. The lime should be put in first, and then, acting as a weighty material, it will combine in part with some of the organic matter in solution, and in part will make the water alkaline. The sulphate of alumina should then be added; it sets free the ammonia, which combines with the sulphur; "it acts as a mordant, and down it goes." "Now," continues Dr. Tidy, "I am bound to say this: I have never yet seen an effluent from a precipitation process that has not a slight smell about it; but it is not the smell of sewage, it is the smell of effluent, *sui generis*. Now let that effluent, after precipitation, flow over a small area of land, and you give your effluent the finishing touches towards purification." "I say that by combining precipitation, which will produce a good effluent, with land treatment, or prepared filters, or something of that kind, you may produce the best effluent that is known." Dr. Tidy does not attach much importance to the manurial value. There are several points, he says, to be observed in the precipitation process; the sewage must be treated fresh, it must be strained in some way before the chemicals are added, the chemicals must be sufficient, it should be efficiently stirred after they are added, and there should be ample tank accommodation. An interesting discussion was held upon this paper on May 5th, 1886, which will be found in the *Journal of the Society of Arts*, for May 7th.

In addition to his services to chemical science, especially in the matter of analysis, Dr. Tidy has done good work in connection with jurisprudence, and he has aided greatly on many occasions in the detection of crime. The eulogium passed by the judge upon his skill at the Lamson trial was certainly well deserved, and his evidence at the recent Bartlett case will be remembered. In relation to poisons, Dr. Tidy delivered a course of lectures at the Royal Institution in 1885, wherein he treated of their chemical constitution and vital actions.

In 1882 he was appointed joint Public Analyst to the Home Office, with Dr. Stevenson of Guy's Hospital. He is a Fellow of the Chemical Society and of the Chemical Institute of Great Britain, and a Member of the Royal Institution, besides holding the office alluded to of Professor of Chemistry, Medical Jurisprudence, and Public Health at the London Hospital. Dr. Tidy married a daughter, now deceased, of Dr. Horace Dobell, and niece of the late Sydney Dobell, the poet.

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Yours faithfully

E Waring.

EDWARD JOHN WARING,

M.D., F.R.C.P., F.R.C.S., F.L.S., C.I.E.

THE name of Dr. Waring is widely esteemed throughout the East, as that of a physician who has devoted a lifetime to the study of the medicinal resources of India, and who has done a great deal to alleviate the sufferings of our Oriental dependents. He belongs to an old Shropshire family, long settled at Ford, near Shrewsbury, and is the sixth son of the late Capt. Henry Waring, R.N., and of Margaret his wife, daughter of Jacob Henry Franks, Esq., of Misterton Hall, Leicestershire, and was born at Tiverton, in Devonshire, on December 14th, 1819. Removed in early life to Lyme Regis, Dorsetshire, he was placed at the school kept there by Mr. George Roberts, well known as the author of the "Life of the Duke of Monmouth," and other historical works. For a short period he was also at the Ilminster Grammar School, under the Rev. J. Allen. He received his medical education partly at the Bristol School, and partly in London, at the Charing Cross Hospital.

Dr. Waring's family has been distinguished by several of its members, who have become well known in the literary world. His eldest brother, George Waring, M.A., of Trinity College, Cambridge, and Magdalen Hall, Oxford—who was described by Professor Thorold Rogers in an obituary notice as "the most learned man in England, probably in Europe"—was co-editor with Dr. Bosworth of the "Gothic and Anglo-Saxon Gospels" (1865). Another brother, Francis Robert Waring, Deputy Inspector-General of Hospitals, was the author of "Truths *versus* Shadows," "The Darwinian Theory Examined," and other works, in which he adduced strong arguments against the theory of Evolution. A third brother, perhaps the best known, John Burley Waring, who died in 1875, was the author of a large number of important and valuable works on Architecture and the Fine Arts, of which "Masterpieces of Industrial Art and Sculpture," "Ceramic Art of Remote Ages," and "Architectural Art in Italy and Spain," will be best remembered.

At an early period of his life Dr. Waring manifested in a decided degree the same literary tastes. Before he had completed his twentieth year even, he had compiled a "Biographical Dictionary," containing about 5,000 lives, and occupying four thick quarto volumes. This work, still in existence, bears witness to his possession at the time of those scholarly attainments which have confessedly characterized all his later productions, and shows that he was distinguished then by the same close application, wide grasp of facts, and power of arranging materials, which he has since manifested in his bibliographical and therapeutical works.

In 1841, previous to obtaining any practice, supported, however, by a strong testimonial from Mr. Henry Hancock, whose pupil he had been, he went as Surgeon on board a ship to Sierra Leone, and thence to Port Morant, Jamaica, where, in consequence of advantageous and tempting offers, he commenced practice, and, with the exception of a hasty trip home to pass the examination of the College of Surgeons in 1842, he remained there, acting as Health Officer, till the close of 1843. At that time he returned to England, entering the service of the Emigration Commissioners, and, mainly under their auspices, he visited Australia, the Cape of Good Hope, Calcutta, Trinidad, etc., winding up with a tour through the United States.

In 1847 he married Caroline Anne, who died in 1874, daughter of William Day, Esq., J.P., and D.L., of Hadlow, Sussex, and settled at Uckfield in that county; but, having sustained heavy pecuniary losses, he had, as it were, to commence life afresh, and consequently accepted the appointment of Assistant Surgeon in the Honourable East India Company's service, on the Madras Establishment.

In 1849 he arrived at Madras, where he served his probationary period (which, however, was shortened in consideration of his age and previous experience), and passed the required Hindûstani examination. He was then posted to the charge of Mergui, in the Tenasserim Provinces (part of ancient Burma), one of the smallest and most solitary stations occupied by Madras troops on that coast. This place is situated 240 miles from Moulmein, and 1,000 from Calcutta, accessible only by sea, and contained at the time, in addition to a large gaol and a company of Sepoys, only four Europeans, besides his own immediate family, and two American missionaries. Here he was stationed during the whole of the Burmese war. While at this station he compiled his excellent "Manual of Practical Therapeutics," wherein he sought to supply a deficiency which existed in most manuals of materia medica, by bringing together within a small compass the opinions and experience of the most eminent writers of modern times, as to the real value of medicinal agents in the treatment of disease. This work, published in London, in 1854, proved a great success, having gone through four editions in England, and one in America, and is still, after the lapse of more than a quarter of a century, held in high esteem on account of its practical utility. It forms one of the Messrs. Churchill's valuable "Manuals." The last edition (1886), was carried on by Dr. Waring single-handed as far as the article "Quinine," but then the weight of advancing years, and decreasing powers of vision, due to cataract, obliged him to call in the aid of Dr. Dudley W. Buxton, who acted as editor and completed the work. As a proof of the high estimation in which the "Manual" is held, it may be mentioned that a copy was attached to the Head-quarters of each regiment in the United States Service, under the direction of Dr. Billings, Brevet Lieutenant Colonel, U.S. Army. *The Dublin Quarterly Journal of Medical Science* says of it: "A more laborious, painstaking, and valuable composition does not exist in any language on the subject; one which should be in every practising physician's and surgeon's study, without which every library, however rich otherwise in works on materia medica, must of necessity be incomplete;" an opinion that was endorsed by many other professional journals.

It was while stationed at Mergui that Dr. Waring, finding the supply of drugs running short, in consequence of the Burmese war, was first led to seek for substitutes in the bazaars and neighbouring forests. Of the principal of these he drew up an account, which he forwarded to the Madras Medical Board, who published it in a volume of official reports (Madras, 1855, p. 406). This was the original commencement of Dr. Waring's investigations into the indigenous medical products of India, to which he subsequently devoted so much of his attention, and the value of which he has done so much to prove.

In 1853 he returned to India to take up the appointment of Residency Surgeon at Travancore. His official duties there being light, he was stimulated by the example of the British Resident, General Cullen (grandson of the illustrious Cullen, of Edinburgh), to study the botany of that region, extending from Cape Cormorin to Cochin on the Malabar coast, paying special attention to those indigenous plants which were held in repute by the natives as possessing remedial properties. His observations, incorporated with those recorded by others, he subsequently published in the *Indian Annals of Medical Science*, and in the *Madras Quarterly Journal of Medicine*. To his collection of native drugs, with dried specimens of the plants yielding them, a medal was awarded by the Jurors of the Madras Exhibition of 1855.

He did not, however, confine himself to this branch of study; but, in 1854, published at Trevandrum, the capital of Travancore, "An Inquiry into the Statistics and Pathology of Abscess in the Liver," which Professor Parkes (*British and Foreign Medical and Chirurgical Review*, July, 1855, p. 22) pronounced to be one of the most useful works published for a long time past on Hepatic disease. In this book 300 cases of Hepatic Abscess, all occurring in India, are recorded, and the details in each case are summarized, and subsequently analyzed. The deductions disclose many important facts relating to the pathological history of the disease, and have been largely quoted by many subsequent writers on this affection. The work is regarded as a standard one on the subject.

In 1856 Dr. Waring succeeded to the appointment of Durbar Physician to H.H. the Maharajah of Travancore. There he availed himself of his official position to institute an inquiry into the statistics, etc., of Elephantiasis, which is intensely endemic in Travancore and in the neighbouring state of Cochin. His report was published in the fifth volume of the *Indian Annals of Medical Science*, and was afterwards reprinted as a separate monograph. It contains many startling and interesting facts, which go to prove that the disease in question is essentially of a febrile nature. Each successive attack of Elephantoid Fever is followed by increased deposits in the extremities and other parts of the body; and Dr. Waring proves that the affection belongs to the sea-board, the only certain remedy being removal more than nine miles inland, as no cases are found to have originated at a great distance from the shore.

Although he had now less leisure at his command, he continued his examination of the action of native remedies with greater energy, having a large hospital wherein to carry out his trials with them. In 1860 he published the first edition of his "Bazaar Medicines," in English and Tamil, for the use of the district vaccinators of Travancore. Afterwards it was reprinted in Tamil alone by the press of the Missionary Society of Travancore, for the use of catechists and others, and had a wide popularity. Later again, in 1868, a Malyalim translation, by Dresser Ramswammy Rajoo, was published for the Travancore Government. Thus this excellent work has had a large circulation amongst the people of Travancore and Tinnevelly, and has greatly influenced the practice of the native doctors. It still enjoys a considerable reputation in the East, and is found in most households all over India; and a translation in the Karen language of Burma is now passing through the press. The English editions have found favour amongst planters, missionaries, and others, for the book points out in simple terms how pain may be alleviated, and diseases sometimes cured, by means of remedies procurable in bazaars, at a nominal cost, or growing at the very doors of the people in all parts of India. Dr. Waring believes that missionaries, whose stations are often far removed from English settlements, and where regular medical assistance cannot be called in, should be able to minister, in case of need, to the physical ailments of their catechists and pupils. It is his firm conviction that the more the principle of Medical Missions—making Religion and Medicine go hand in hand—is carried out, the greater, humanely speaking, will be the success of missionary efforts. Then again, there is a large army of Anglo-Indian officials in the different Presidencies, men with wives, families, and dependents, often far away in up-country stations, to whom a knowledge of the means by which pain may be alleviated and disease combated, must be of the utmost value. The last edition of the work treats of a large number of "Bazaar Medicines" (indicated by their names in the several vernacular languages of India), their remedial properties, and the affections for which they are specially applicable; and it has likewise sections on "Cooking for the Sick" and on "Snake Bites," Dr. Waring was also, at this period, deeply immersed in the preparation of an "Encyclopædia Therapeutica," towards which he amassed a large quantity of material during the last ten years of his Indian service; but, like many other grand conceptions, it remains now, owing to several circumstances, a mass of unfinished manuscript. It is satisfactory, however, to be able to add that portions of it are utilized by Drs. Sedgwick and Power, as they mention in the preface, in their valuable edition of "Mayne's Lexicon," now in course of issue by the New Sydenham Society. Dr. Waring, himself, has also made great use of this large store of materials in his "Bibliotheca Therapeutica." During his residence in India he made several communications on Therapeutics to the *Indian Annals of Medical Science*, the most notable being on the principal Indigenous Tonics, Anthelmintics, and Purgatives of the country, the information being drawn in each case from European and native sources.

Dr. Waring's residence in Travancore was marked by the establishment, through his instrumentality, of the first school for children of the Pulayar (Pooliar), or slave caste. The scholars consisted of the waifs and strays left by a severe famine in 1860. Under the fostering care of the Missionaries, especially of the Rev. S. Mateer, of the London Missionary Society, the school has flourished ; it has already borne good fruit, and is extending its operations in other quarters. In addition to a small private endowment, the scholars receive daily rations of rice, etc., from the State. In this, as well as in other things which pertain to the welfare of the people, the Rajahs of Travancore have proved themselves liberal and enlightened rulers.

In 1863, in consequence of failing health, Dr. Waring returned to England, and took some months of much needed rest. In the following year he was made a Fellow of the Royal College of Surgeons; and subsequently, in 1865, took the degree of M.D., at St. Andrew's University ; and in 1866, became, by examination, a Member of the Royal College of Physicians of London, of which, in 1871, he was elected a Fellow.

In 1865, it having been resolved to issue a Pharmacopœia for India, based upon the British Pharmacopœia, and intended to include such supplementary matter as would meet the requirements of the Indian medical community, the Secretary of State for India in Council appointed Dr. Waring to the responsible post of Editor, nominating at the same time a Committee to assist him in the preparation of the work. The Committee consisted of the following members, eminent for their scientific attainments :—Sir J. Ranald Martin, C.B., F.R.S., President ; Sir W. O'Shaughnessy Brooke, M.D., F.R.S.; Alexander Gibson, F.L.S.; Daniel Hanbury, F.R.S.; Dr. T. Thomson, F.R.S.; Dr. J. Forbes Watson, F.L.S.; and Dr. R. Wight, F.R.S. After much delay, caused partly by frequent communications with authorities in India, this valuable work was issued in 1868. In connection with its publication, it may be mentioned that in 1879 the Under-Secretary of State for India applied to Dr. Waring to know if he would act as Editor of a new issue of the "Indian Pharmacopœia," but, although he replied in the affirmative, no further steps appear to have been taken in the matter.

Meanwhile Dr. Waring had been engaged upon other literary work. His "Tropical Resident at Home," issued in 1866, was addressed to Europeans returning from India and the Colonies on subjects connected with their health and general welfare, his remarks thereon being couched in the form of letters. This little work, written in a pleasant, chatty tone, as to old friends, to whom advice is valuable, deals with nearly all the conditions of social and domestic life in their relation to health and comfort, such as the differences between Colonial and English hospitality, the difficulties which the Anglo-Indian or returned Colonist meets with, and the changes which have passed over England during his absence, the pursuits which he shall follow, the place to be selected for his residence, the advantages of town and country life, his house, its furniture and sanitary arrangements, his clothing, food, beverages, and a host of other matters, not omitting his income, and the way of managing it to the best advantage. In the following year, Dr. Waring brought out his monograph on "Cottage Hospitals," which is a repertory of information on the management of these useful institutions, based on personal experience and investigation. He speaks of the advantages they afford to the poor, in regard to accommodation in case of illness, and the nursing, food, and medical supervision they provide, and their obviating the necessity for the separation of friends, and for the removal of the sick to the vitiated atmospheres of crowded hospitals; to the medical practitioner, in raising his professional status and giving him greater scope for work; and to the rich, in providing them with more expert surgeons in their localities, and with a proper channel for their charitable donations. He then goes on to deal at length with the site, building, and furniture of the hospital, and of its management in detail. The work was so highly thought of, that Dr. Mencke, of Berlin, translated it into German in 1872.

In 1869, Dr. Waring, having retired from the Service, settled in London, and continued his literary pursuits with vigour, especially in reference to Medical Bibliography. The results of his labours are embodied in his "Bibliotheca Therapeutica," which was issued in two volumes by the New Sydenham Society in 1878-9. In this book, the result of upwards of twenty years' hard work, he has brought together, and arranged under several headings, the titles of upwards of 10,000 works relating to therapeutics, and articles of materia medica, as well as to the British mineral waters, appending critical, historical, or practical comments in about 2,000 instances. The "Bibliotheca Therapeutica" is a model bibliographical work, for the author has been at the utmost pains to give the titles of the books he names with the greatest clearness, together with sizes, dates of editions, and places of publication, and he has gone further to say with considerable fulness in what English libraries the works in question may be found. Ample indices of diseases, authors, and subjects treated, render the contents of this elaborate work easily available for reference. In addition to the above, Dr. Waring has published "The Hospital Prayer Book," "Precious Jewels for Daily Use," and other small works of a devotional character, besides papers on the "Statistics of the Diseases of India," etc., in the *Indian Annals of Medical Science.*

The scheme of establishing a London Medical Mission in St. Giles's having in 1870 been set on foot by Dr. Heath Strange and others, Dr. Waring took a warm interest in it. He was one of the original Committee, and on the occasion of the Mission commencing operations on May 22nd, 1871, he prescribed for the assembled patients, about twenty in number. In this work and labour of love he was associated with Dr. J. J. Macaldin and Dr. J. E. Ward, and they conjointly formed the medical staff of the Mission till the following October, when those duties were transferred to Dr. George Saunders, C.B., under whose special qualifications for the work the Mission has greatly extended its operations, and is doing a vast amount of good in the back slums of St. Giles's and Seven Dials. Another charitable work in which Dr. Waring has greatly interested himself, is that of supplying the aged and hard-working poor with spectacles gratuitously, and he has recently written a pamphlet, entitled "Medical Missions," which gives details of the method of managing such institutions. Up to the present time, between six and seven hundred people have been supplied with spectacles by this means, and may have sent grateful letters, and have borne testimony to the benefit they have derived.

Unfortunately, Dr. Waring's eyesight having completely failed him, he has been compelled to forego both his out-door occupations, and his literary labours. The large and very valuable library which he had been forming for many years, was presented by him, in February, 1887, to the Army Medical School in Netley, and, in the letter conveying his gift, he said that he had a deep gratification in feeling that the dear old volumes which had found him interest and employment for so many long years, and for which he felt a sort of paternal affection, would there find a dignified and useful home. "Dr. Waring," said Sir Joseph Fayrer in acknowledging the gift, "is a great author and physician, and a man who has conferred infinite benefits on his profession. Such a valuable gift as this could scarcely be obtained anywhere else, for on the subject of materia medica it is unrivalled, and I know no man in London who has such a collection." The number of separate works presented by Dr. Waring, was about 350, comprising between 600 and 700 volumes, dealing with the materia medica of Japan, China, Cochin-China, Java, Mauritius, India, Ceylon, Cape of Good Hope, Guinea, Arabia, Egypt, the West Indies, Mexico, French Guiana, Brazil, Peru, the United States, etc., besides several books of medical bibliography.

Dr. Waring is a Surgeon-Major (retired) of Her Majesty's Indian Army, a Fellow of the Linnean Society and of the Royal Medical and Chirurgical Society, and an Honorary Member of the Société de Pharmacie of Paris. In 1881, it having been felt that the Indian Medical Service had been neglected, it was determined to confer the Companionship of the Order of the Indian Empire upon a number of its most distinguished representatives from the three presidencies. Accordingly, on the occasion of the Queen's birthday in that year, Dr. Norman Chevers for Bengal, Dr. Morehead for Bombay, and Dr. Waring for Madras, with Brigade-Surgeon Oliver Barnett, were decorated with the Order at Windsor, a distinction which all felt to be well deserved. The event was celebrated by *Punch* in some very appropriate lines, which may be quoted :

> "The Indian Empire Order may right well the guerdon be,
> Of gallant men who worked full hard beyond the Eastern sea ;
> And Doctors do stern duty there a thousand dangers sharing,
> So here's a health to MOREHEAD, CHEVERS, BARNETT, and to WARING."

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SIR T. SPENCER WELLS, BART.,

F.R.C.S., M.D.

IN no department of operative surgery have there been more brilliant or more striking advances within recent years than in that of the treatment of abdominal diseases; and it would be difficult to over-estimate the benefits that have flowed from the progressive skill of the distinguished surgeons who have introduced and revived the practice of Ovariotomy. The operation was proposed about two centuries ago; William and John Hunter thought about it, and suggested methods of performing it; John Bell lectured upon it in 1794; and his pupil, McDowell, its pioneer, had fourteen cases in Kentucky, between 1825 and 1839. At that period, in this country, Lizars, Granville, and Jeaffreson had cases, and Morgan, Key, and Bransby Cooper operated a few times at Guy's, but cases were very rarely seen in the hospital. It was Dr. Charles Clay, of Manchester—whom Mr. Lawson Tait justly styles "the father of ovariotomy, so far as Europe is concerned"—who first conducted a long series of operations, and showed that ovariotomy was a real advance in surgical art, and not merely a bold experiment, depending for its success upon accident or good fortune. Nevertheless, there was much in the nature of the operation to make careful men hesitate, and ovariotomy fell into some disrepute. It is in fact only within the last five-and-twenty years that it has become a widely-used surgical means; and the degree of safety with which it is now pursued has led to a rapid extension of operation for the relief of several diseased abdominal organs. Amongst the most distinguished of living ovariotomists is Sir Spencer Wells, who has had a great share in the revival of the operation, and whose writings on the subject are very well known.

Thomas Spencer Wells is the son of the late Mr. William Wells, of St. Albans, and was born in 1818. "There are not many here," he said, speaking of his own career, at a meeting of the Midland Medical Society, in 1884, "who can carry back their reminiscences as far as mine go. Without being formally apprenticed, I had all the advantages of the old apprenticeship system under an usually able and worthy man, the late Michael Thomas Sadler, of Barnsley, in Yorkshire. For one year I lived with one of the parish surgeons of Leeds, attended the lectures of Hey and Teale, and saw much practice in the Leeds Infirmary. In 1837-8 I was in Dublin, under Graves and Stokes, Crampton, Beattie, Harrison, Apjohn, and Jacob. In 1839-40 I worked hard in St. Thomas's Hospital, under Green, Travers, and Tyrell.

Yours truly

T. Spencer Wells

I obtained the prize for the fullest reports of examinations of the bodies of patients dying in the hospital during that period." Mr. Wells became a Member of the Royal College of Surgeons in 1841, and soon afterwards entered the Royal Navy as Assistant Surgeon, serving for six years in the Naval Hospital at Malta. In addition to naval practice, he saw many patients, both male and female, and performed many operations in consultation with resident practitioners in Malta, but he only recollects one case there which might have been a case of ovarian tumour. In 1844 he was made an Honorary Fellow of the Royal College of Surgeons; and, in 1848, he was in Paris, where his attention was directed to the subject of ovariotomy by his friend Dr. Waters, of Chester, and they came to the conclusion that it was not a justifiable operation. He tells us that he cannot remember having seen, during his pupilage, or in the dead-house, the wards, or the out-patient room of St. Thomas's, or in Leeds, or in Dublin, a single case of ovarian disease; and he doubts whether it formed any part of the examination at either the College or the Hall.

In 1853 Mr. Wells settled in London, and a year later joined the Samaritan Hospital—at that time a dispensary for the diseases of women. His practice had been largely obstetric, but had latterly gone much in the direction of ophthalmic surgery, and he knew as yet nothing of the particular diseases through whose treatment he has since made his name. At this period he edited for some time the *Medical Times and Gazette*, and was thus brought into contact with many eminent medical men, amongst whom was Baker Brown, who has played a conspicuous part in the progress of gynæcology. In April, 1854, Mr. Wells and his friend Nunn, of the Middlesex Hospital, assisted Baker Brown in his eighth case of ovariotomy. This was the first time he had ever seen the operation performed, and it certainly did not encourage him to look favourably upon it. The patient died, and her death discouraged Brown. "He, Nunn, and I," says Sir Spencer Wells, "talked the matter over, and I well remember Brown's saying 'It's the peritonitis that beats us.'" Of Brown's first nine cases seven died, and this led him to cease operating for more than two years and a half, and to revert to treatment by pressure and iodine.

Shortly afterwards the Crimean war broke out, and Mr. Wells left London, served with the army in the East, and of course lost sight for a time of all the diseases of women. Any impression that he had received as to ovariotomy was certainly not favourable. During the war he was surgeon to the British Civil Hospitals at Smyrna and Renkoi, and was closely associated with the work of Parkes, who was one of his oldest professional friends. When he returned to London in 1856, he was certainly much less afraid of abdominal wounds, for he had seen a number of cases which taught him that the peritoneum would bear much rougher handling than he had deemed permissible. He took up his work at the Samaritan Hospital again, but saw very few cases at first of ovarian disease. The first made a very painful impression upon him. "Snow Beck," he says, "tapped a very fine young woman, and injected iodine, he thought, into the cyst; but he really injected the peritoneal cavity. He had not taken the precaution of passing a long catheter through the short canula of his trocar; the emptied cyst slipped off the canula, and several ounces of tincture of iodine passed directly into the peritoneal cavity. Beck was grievously distressed; but the case did not so much deter us from the use of iodine as awaken us to the necessary precautions as to the mode of injection. But we had very few cases of ovarian disease, and it was not till December, 1857, that I made my first attempt to perform ovariotomy." In this first case he was assisted by Baker Brown, who tried to dissuade him from going on, and it was a failure. The second operation—the first one completed—which was a complete success, took place in February, 1858, and was a case of the greatest interest. It is not difficult to understand the satisfaction felt by the successful operator. It is scarcely possible to imagine a position more discouraging than that in which Mr. Wells was placed when making his first trials of ovariotomy. The first attempt was a complete failure, as is related above, and served to strengthen, not only in the minds of others, but in his own mind also, the fear that he might be entering upon a path which would lead rather to an unenviable notoriety than to a sound professional reputation. The medical press, notwithstanding Dr. Chas. Clay's series of successful cases, had denounced the operation, both in principle and practice, in the strongest terms. At the medical societies speakers of the highest authority had condemned it most emphatically. The example of the men who had practised it was not followed; some of them had given it up. Only once had a successful result been obtained in any of the large metropolitan hospitals—that by Cæsar Hawkins, at St. George's, in 1846, and he never undertook it a second time. Every other attempt at Guy's by Morgan, Key, and Bransby Cooper, and at St. Thomas's by Solly, had ended in death.

Keith followed Spencer Wells, and assisted him greatly in the revival of ovariotomy. The latter had had eight cases when the former began, and the two were afterwards friendly rivals, "assisting each other, comparing notes, not always running in the same track, but always equally anxious to perfect the operation." Both were very successful, and their success greatly led to the revival of ovariotomy. "Anyone," says Sir Spencer Wells, "who will look over the reports of my early cases, will see the names of the men who sent me the patients—West, Rigby, Watson, Acland, Hare, Stokes, and Oldham—of those who, as well as my colleagues, Savage, Priestley, Graily Hewitt, assisted me, or were present at the operations, among whom I may mention Paget, Fergusson, Tyler Smith, Bowman, Seymour Haden, Pirrie, Baker, Grimsdale, Bickersteth—who discussed with me various questions which arose as to pathology and treatment, Aitken, Richardson, Ritchie, Hutchinson, Frank, Druitt, Robert Lee, Churchill, Beatty, and Simpson—who, for their personal assurance, like Nélaton, Worms, Demarquay, De Mussy, Péan, Courty, came from France; or De Roubaix and Boddaert from Belgium; or from Germany, as Schuh, Billroth, Esmarch; from Italy, as Porta, Vanzetti; or from America as Gross and Marion Sims—will find no difficulty in understanding that we had now reached a turning-point."*

From that date the progress of ovariotomy was rapid, and it was soon quoted as one of the triumphs of modern surgery. The causes of death were investigated in fatal cases, mistakes were corrected, experience was gained, and confidence was given to the profession. The old plan of operating in a hot, moist chamber, was abandoned, the position of the patient was changed, better anæsthetics were used, better precautions were taken, and the greatest attention was given to details, for the success of ovariotomy depends upon them. Vegetable material for ligatures and sutures was disused; and, after trials with silver, iron, and platinum wire, horse-hair, fish-gut, and other materials, pure silk was fixed upon, and experience proved that, after a few weeks' retention in the animal body, it entirely disappeared. Mr. Wells paid great attention during his early operations to the best method of closing the opening in the abdominal walls. By examination of patients who died under the operation, and by experiments on animals, he convinced himself that by passing the sutures through the whole thickness of the abdominal wall, including the peritoneum, at such a distance from the divided edges as to permit the two surfaces of the serous membrane to be brought into contact when the sutures were tied, instead of merely bringing the edges together, a more permanent and complete union was obtained, and the oozing of matter into the abdominal cavity was avoided. At this time of activity in abdominal surgery, there was a corresponding development in the literature of the subject, and monographs on ovariotomy, and reports of cases, came from many quarters, and the operation was sanctioned on all hands.

Sir Spencer Wells, during a long and successful career in all departments of Surgery, has performed the operation of ovariotomy, with which his name is popularly connected, on a great number of patients. Experience has so lessened the dangers of the operation that the deaths from it in experienced hands do not amount to more than three or four per cent. at the most; and, as a large proportion of the women operated upon are now alive and well, the number of years of useful life gained for the female population by his skill alone reaches many thousands. Add to these the lives saved by others who are now working in the same field, think of the happiness diffused among so many families by the living presence of these rescued victims, and then say what gratitude the public owes to the profession for the skill and science brought to bear on the erewhile-deemed inevitably fatal ovarian disease.

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* "The Revival of Ovariotomy" (second edition), 1885, p. 8.

In 1864 Mr. Wells published his first record of cases, 114 in number, and this was followed, in 1872, by an account of 500 cases, and again in 1882 with another of 1071 cases, all showing a gradually decreasing death-rate. He has long been an ardent advocate of the antiseptic system, to the practice of which, combined with his own experience and improved methods, he attributes the low percentage of mortality. This is how he speaks of the operation with which he has been so prominently concerned: "Before 1858, the operation, like all good things, had been of slow growth. One hundred years ago it was but a germ, that might be described in a lecture by John Hunter; ten years later it was seed that fell from the hand of Bell; in little more than another decade it germinated as a living vitalizing reality in Kentucky. Sixty years ago it was transplanted to the land of its philosophical conception. In twenty years more we find it a sapling on English soil—growing slowly at first, and up to 1858 looking as if it might prove no more than a withering gourd. But in 1865 its root had struck firm, its stem stood erect, its branches were wide and strong, known and sought as a refuge by the sick and dying. That it was no withering gourd has been proved by all that the world has since seen. Thousands of perishing women have been rescued from death; many more thousands of years of human life, health, enjoyment, and usefulness have been given to the race; and to all future victims of a malady before inevitable in its fatality, it gives consolation, hope, and almost certainty of cure."

In an address on "Recent Advances in the Surgical Treatment of Intra-Peritoneal Tumours," delivered before the International Medical Congress, in 1881, Sir Spencer Wells gave his experience on three important points—the best means of uniting penetrating wounds of the abdominal walls; the use of pressure-forceps in operation, he having been probably the first to substitute larger instruments for the old "snip" or "clip," so easily lost in the abdomen; and the question of drainage and antiseptic surgery, concerning which he said that he had not used a drainage-tube for more than three years, and that, unless in a very exceptional case, he should not venture to use another. In this address he also spoke of the attacks made upon him by the anti-vivisectionists. "These curious philanthropists," he says, "persistently attack me because I sacrificed a few rabbits, dogs, and guinea pigs, in the year 1859, in order to demonstrate beyond any doubt, for all time to come, the fact that human life may be saved, and life-long suffering prevented by an improved means of uniting penetrating wounds of the abdominal cavity. . . . One can hardly understand the so-called reasoning which insists that this should not be demonstrated once for all in a few narcotized animals, but that we should grope our way to the realization of the truths through the sufferings and by the dissection of a series of women."

Sir Spencer Wells's chief contributions to the literature of abdominal surgery have been his works on "Diseases of the Ovaries, their Diagnosis and Treatment," and on "Ovarian and Uterine Tumours," and he has also made many contributions to journals on the same and other kindred subjects.

Among other questions to which Sir Spencer Wells has paid attention is that of cremation, of which he is an ardent advocate. In the *Times*, of March, 3rd, 1885, a letter from him will be found, in which, after speaking of the immense number of bodies buried in and about London, he says: "Could anyone be surprised at the out-break of some devastating pestilence, a hundred-fold more destructive than the plague or black death of the middle ages? And ought not every sanitary reformer to aid the revival of the ancient practice, which would convert the existing cemeteries, so rapidly becoming sources of danger to the public health, into permanently beautiful gardens, receptacles for vases and cinerary urns, which would encourage sculpture, mural decoration, and coloured glass-work; while in our country churches, the ashes of the people might again repose in death near the scene of their work in life, perfectly harmless, instead of polluting the earth of the churchyard, and the water of the surviving people, or being carried far from their homes and places of worship to some distant cemetery, which before long must become over-crowded and pestilential?" On April 23rd, of the same year, Sir Spencer Wells delivered an address on the subject at the Parkes Museum of Hygiene, in which he gave statistics and quoted reports in favour of cremation, and spoke of the legal aspect of the question, and the history of the Cremation Society.

Sir Spencer Wells was Vice-president of the Royal College of Surgeons of England in 1879-80, and President in 1882-3. In 1882 he received the honour of a baronetcy as an acknowledgment of his services to medical science and to humanity. His books on Abdominal Surgery are amongst the leading works of reference on the subject. His Hunterian Oration, public addresses, and contributions to periodical literature would fill several volumes, and have aided in a marked degree the progress of modern opinion, not only in practical surgery, but in various matters affecting the public health, such as abatement of the smoke nuisance, the sanitary condition of hospitals and of passenger ships, and, as is stated above, cremation of the dead as a means of protecting the living from the evils which follow the present mode of burial in Europe.

Sir Spencer is an Honorary Fellow of the King and Queen's College of Physicians, and of the Royal College of Surgeons of Ireland, an Honorary M.D. of Leyden and of Charkof, a Knight Commander of the Norwegian Order of St. Olaf, a Fellow of the Royal Medical and Chirurgical Society, a Member of the Royal Institution, of the Pathological Society of London, of the Surgical and Medical

Societies of Paris, and of the Society of Physicians of Sweden, an Honorary Member of the Physico-Medical Society of Moscow, and an Honorary Member of the Obstetrical Societies of Berlin and Leipzig, and of other societies in Brussels and Dresden, as well as Surgeon to the Queen's Household, and Consulting Surgeon to the Samaritan Hospital for Women and Children. He was also formerly Professor of Surgery and Pathology in the Royal College of Surgeons of England.

Sir Spencer Wells married, in 1853, Elizabeth Lucas, who died in 1886, daughter of James Wright, Esq., of Sydenham, Kent, and has issue living one son and five daughters. His portrait, in the robes of President of the Royal College of Surgeons of England, is after the picture by Lehmann, which was highly praised by critics in their notices of the Exhibition of the Royal Academy of 1884.

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SIR ERASMUS WILSON,

F.R.C.S., F.R.S., LL.D.

THOUGH Sir Erasmus Wilson has been termed a "specialist," his life-work was essentially broad, and, as Sir James Paget has expressed it, "wide-reaching both in science and in practice." It was not until after he had worked hard for some years as a teacher of anatomy, and as a surgeon in general practice, that he brought to bear his great skill in recognising the external forms of disease upon the special study of affections of the skin; and all his success in that branch of the profession was based upon the broad experience of his early days. He will be remembered amongst the greatest dermatologists of the time, and as a man of a singularly benevolent and philanthropic disposition, who gave largely to many purposes in connection with his own profession.

William James Erasmus Wilson was born in the High Street of Marylebone, at the house of his maternal grandfather, Erasmus Bronsdorph, a Norwegian by birth, on the 25th of November, 1809. His father, William Wilson, a Surgeon in the Royal Navy, and a native of Huntly, in Aberdeenshire, who had won his way by dint of hard work alone, settled at Dartford, in Kent, at the conclusion of the French war, attracted thither by the circumstance that Dr. William Thomson, also a native of Huntly, and an old fellow-pupil, was living at Crayford, near by. Erasmus Wilson received his early education at the Grammar School at Dartford, and afterwards was instructed by the Rev. George Renouard, rector of Swanscombe, whither his father had removed.

The adventurous habits of a sailor's life, and his own early career, led his father to the belief that a boy could not be launched too early into the world, or commence too soon the duties of practical usefulness. Hence, at the early age of sixteen, namely, in October, 1825, Erasmus Wilson was admitted a member of the anatomical class of John Abernethy, at St. Bartholomew's. He had had some training already in the Workhouse Infirmary at Dartford; and, in London, he received much kindness and personal attention from the genial old man, with the white hair, blue coat, and gold buttons, white cravat, buff waistcoat, and feeble gait, who was admired and almost adored by his class. It was here, on the benches occupied at the same time by George Gulliver, Richard Owen, Richard Partridge, and several others, afterwards men of renown, that Erasmus Wilson formed some early tastes and made some useful

Yours faithfully.
Erasmus Wilson

friends. Amongst the first was one for the study and teaching of Anatomy ; amongst his early friends were John Walter, of Antigua, and George Langstaff, the son of the distinguished Pathologist.

John Walter, who late in life practised as a physician in Bridge Street, Blackfriars was an apprentice of the Society of Apothecaries, and a good botanist. In the summer-time he visited Wilson at Dartford, where also resided a botanist of some eminence, Dr. Peete, and, by the side of his friend, and rambling through some of the most charming rural scenery in England, rich in botanical rarities, and redolent of the aromatic perfumes of the chalk-loving plants, Erasmus Wilson received his first lessons in Natural History, and stored them up with delight. It was at this time that the systems of Linnæus and of Jussieu claimed a place in his attention, producing fruit in after years in his commentaries on the "Classification of the Diseases of the Skin," and in his own efforts towards the arrangement of those diseases. George Langstaff, who died early and sadly, was a zealous entomologist, and the rich preserves of Darenth Wood and its surroundings yielded ample harvest to the young men on their pleasant excursions. Wilson had reason to say that he hardly knew to which of his two friends he owed most in this delightful and agreeable introduction to Natural History ; a science which he studied later in the class room of Robert Grant, at University College; and under the eloquent and enthusiastic teachings of that remarkable man.

When the session of 1855-6 was over, Erasmus Wilson became the house pupil of Mr. Langstaff, the father of his friend. Mr. Langstaff had charge of the populous parish and large infirmary of Cripplegate, which furnished surgical cases and illustrations of pathology, in inferior degree only to the great hospital in the immediate neighbourhood, St. Bartholomew's ; and he was at that time engaged in researches on fungous hæmatodes, melanosis, osseous union of the fracture of the neck of the thigh bone within the capsular ligament, morbid changes in the coats of the arteries, and the growth of ganglia on the nerves of amputated stumps. In his dissecting-room many distinguished Physicians and Surgeons, English and foreign, were wont to assemble and discuss pathological questions, and there Wilson was enabled to make the acquaintance of several of the workers of that day, amongst whom were Lawrence, Thomas Davies, Roget, Tweedie, Jones Quain, and Francis Kiernan. Later, in 1841, he had the opportunity of repaying some of the kindnesses of his former master, by editing the catalogue of his Museum.

In 1828, and again in 1830, Wilson visited Paris, and followed the *cliniques* of Dupuytren, Boyer, Roux, Andral, Laennec, Broussais, Dumeril, Orfila, Breschet, and Lisfranc, yielding occasionally to the fascination of St. Louis, and of the lectures on botany, comparative anatomy, and natural history in the Jardin du Roi, where he had the honour of an introduction to Cuvier and Geoffroy St. Hilaire. At La Pitié, Wilson's careful and neat dissections gained for him the admiration of the French students, who called him *le piocheur.*

Somewhere about this time the Aldersgate School of Medicine was opened. Sir William Lawrence delivered the inaugural lecture ; Cooper, a sound and practical teacher, undertook the subject of Chemistry ; Pereira lectured with clearness and force on Materia Medica and Botany, in the neighbouring dispensary ; Clutterbuck filled the Chair of Medicine ; and Jones Quain made a great step forward in the teaching of Anatomy and Physiology, by the introduction of the most recent methods of the School of Cloquet, Béclard, and Bichât. Wilson attached himself to this School, and was successful in carrying off two prizes in the session of 1829-30, those for surgery and midwifery.

The example of his father's earnestness, promptitude, and punctuality, was not lost on Erasmus Wilson. On Thursday, November 25th, 1830, he reached the age of twenty-one, and on that evening passed the examination at Apothecaries' Hall, his old botanical tastes coming pleasantly to his help when the examiners produced a tray of freshly gathered plants. He had inherited a taste for drawing from his mother, a clever amateur artist, which he applied very usefully in his anatomical studies ; the diagrams of the anatomical lectures were always very diligently copied into his note-book, and these memoranda helped to keep the subject vividly in his mind, and thus assisted him greatly at examination times. He became a member of the College of Surgeons in 1831, passing, as before, on his birthday. "What are the muscles of the external ear?" was a question from Sir William Blizard, which might have been a poser for many a student ; but the diagrams exhibited in the theatre of St. Bartholomew's, and preserved in his note-book, enabled Wilson not only to answer it promptly and correctly, but to produce so good an impression on the examiners, that the rest of the examination passed off without difficulty.

Some changes in University College, which had been made during the preceding session, called Dr. Jones Quain to the chair of Anatomy and Physiology there in October, 1831, who, remembering Erasmus Wilson as Mr. Langstaff's Museum pupil, offered to him the appointment—most gladly accepted—of assistant to himself. Wilson remained at University College until his master resigned. His duties were to make the necessary preparations and dissections, to perform physiological experiments, to select the requisite drawings, and to make the extemporaneous diagrams necessary to illustrate the lecture. In addition to these duties, he acted as Demonstrator of Anatomy in the dissecting-room, and assisted Richard Quain in the investigations which he was then making for his great work on the arteries, while his evenings were devoted to private teaching and to preparing students for their examination at the College and Hall.

His consummate ability as a dissector now began to be recognized, and he became a most successful operator, having great confidence in himself, and a calm nerve and steady hand, as well as a moral control over his subjects. He set great value upon a human limb, and never advised amputation so long as the faintest hope remained. He had often been struck, he said, in his young days, with the stories of reckless operations performed in hot haste in the battle-field; and an instance of a wounded officer who declined to have his leg amputated, and recovered, had always great weight with him.

In the spring of 1834, as soon as the session was over, Wilson made an excursion to Belgium and Holland, to the shrine of Camper, Leeuwenhoek, and Boerhaave, in order to inspect the hospitals and medical museums of that country, and afterwards continued his journey to Heidelberg, where he spent the greater part of the summer, making a circuit on his return home through Switzerland and part of Italy. In Heidelberg he enjoyed the acquaintance of Tiedemann, Arnold, Chelius, and Naegele, all men of genius, and of a remarkable stamp.

At University College his taste for drawing was turned to useful account, for he directed and superintended the illustrating of an edition of Dr. Quain's "Anatomy," the pioneer of illustrated works on the subject; and, about the same time, he performed a similar office for Robert Liston, who was then preparing for the press his "Practical Surgery," with 120 engravings on wood, published in 1837. One of the wood engravings, it may be mentioned, represents a leg which was amputated by Wilson himself, before he was twenty years of age.

After quitting University College on Professor Quain's resignation, in 1838, Erasmus Wilson became associated with the celebrated anatomist, Surgeon Carpeu, as Junior Consulting Surgeon of the St. Pancras Infirmary. He also took an active part in the formation of a small School in the neighbourhood of University College, aided by Marshall Hall, John Dalrymple, Turner, Heming, Barnes, and Hoblyn, who were afterwards joined by Rutherford Alcock. It was agreed to name the School after one of the ablest practical physicians of the past, Sydenham; and Sydenham College was inaugurated on the 1st of October, 1838. Unfortunately, despite all the energy thrown into its management, this experiment had to be abandoned after a few years' trial, and Erasmus Wilson betook himself to private practice in Charlotte Street, Fitzroy Square, working also at literature in order to increase his income. As a professional man he had a placid, winning manner, that attracted people to him, and gained him many friends. His literary work was somewhat of a relaxation from the routine of his practice. His first work, published in 1838, was "The Dissector's Manual of Practical and Surgical Anatomy," which reached a second edition in 1853. Then followed, in 1830, "The Anatomist's *Vade Mecum*, a System of Human

Anatomy," which went through a great number of editions. This work was one of Churchill's text-books, and a pleasant anecdote is told about it. "Mr. Wilson," said the eminent medical publisher to him, "when I gave you this book to write I expected you to make a good one." There was an ominous pause, and the young author stood nervously. "Yes," the publisher continued, "I expected you to make a good book, but I certainly did not expect such a beautiful book as this," and thereupon he handed to Erasmus Wilson a cheque for a much larger sum than had been promised.

In 1840 Mr. Wilson was appointed Lecturer on Anatomy and Physiology in the Medical School of the Middlesex Hospital, and shortly afterwards published in the *Lancet* his Lectures on "The Pathology of the Hair," 1840-1, and on "The History Pathology, and Treatment of Diseases of the Skin," 1842-3. This latter series marks his entry upon the study of dermatology, which he afterwards pursued so eagerly and successfully—a study to which he was directed by a circumstance that deserves special mention here.

His father had taken a house at Deham, Bucks, and had set up a private lunatic asylum there, where Erasmus Wilson had made the acquaintance of Mr. Thomas Wakley, M.P., founder of the *Lancet.* In May, 1840, Mr. Wakley appointed him to the post of sub-editor of that paper, which he continued to fill until the duties of his practice compelled him to resign it. He also, about this date, became Consulting Surgeon to the Marylebone Infirmary. It was mainly at the instance of Mr. Wakley that Wilson devoted himself to the practical study of dermatology, though one or two other special departments of medicine had been pressed upon his attention. The skin presented many temptations to an ardent investigator; there hung about it a veil of mystery; there was the charm, to a lover of Natural History, of its classes, orders, genera, and species; and, just before, Breschet and Vauzéme had published their treatise on "The Structure of the Skin," which was magnificent in its wonderful complexity. These attractions were irresistible to Erasmus Wilson, and it was in 1840 that he determined to pursue unremittingly the study of Dermatology. It was his work to systematize this sphere of medicine, of which he made himself a practical master, and in which he had very few rivals in the world. "I have never regretted my choice," he said; "there is only one more beautiful thing in the world than a pure healthy skin, and that is a rare skin disease." Nevertheless, it was, perhaps, the horrible cases of scrofula, and blood-poisoning which he saw amongst the London poor, that awoke his sympathy; and he often gave money as well as medical aid in such cases. "*Sume* the inclosed pound, and call for another dose each week until well," is said to have been one of his occasional prescriptions. Wilson's success as a dermatologist was based, as is stated above, upon a wide experience, and it is unquestionable that his consummate skill as a dietecian, and his great control over his patients, were of the utmost service in his practice. It used to be said that some of his cures were due rather to what he induced his patients to avoid, than to what he made them take; and he cured many skin diseases where others had failed. He was not satisfied with investigating such cases as came before his notice, but sought out others abroad. He went to the East in order to make himself acquainted with leprosy, spent his holidays in Switzerland and the Valais, that he might study goitre, and investigated the cutaneous disorders of the ill-fed peasants of the malarious districts of Italy. All these experiences have made his works on Dermatology standard text-books, which must maintain their place in the hands of all students. A glance at his many writings will show the arduous steps by which he attained his position as a specialist in cutaneous diseases.

In 1842 appeared his most important literary undertaking—"The Diseases of the Skin," which has gone through many editions, and has been translated into German; and in the same year he completed a work in which he had been associated as Editor with Dr. Jones Quain—namely, "A Series of Anatomical Plates, with References and Physiological Comments illustrating the Structure of the Different Parts of the Human Body," published in five volumes. In 1843 he communicated to the Royal Society a paper entitled "Researches into the Structure and Development of a newly-discovered Parasitic Animalcule of the Human Skin—*Entozoon folliculorum.*" In that year also he became a Fellow of the Royal College of Surgeons, and in the next was made a Fellow of the Royal Society.

In 1844 he read two papers at the Royal Medical and Chirurgical Society—namely, "An account of a Horn developed from the Human Skin, with Observations on the Pathology of Certain Disorders of the Sebaceous Glands," and one "On the Classification, Structure, and Development of the Echinococcus Hominis, showing Reasons for regarding it as a Species of Cysticercus;" and, in the same year, he published in the *Transactions* of the "Veterinary Medical Association," papers "On the Skin and Conjunctiva of the Horse," "The Acarus of the Mange," "The *Entozoon folliculorum* of the Horse," "The Filaria Palpebralis," and "The Acarus Phasianus."

In the following year appeared his work entitled "Healthy Skin," which was translated into Italian in 1855, and reached its seventh edition in 1866; and, in the same year, he published "The History of the Middlesex Hospital during the past Century."

In 1846 he read a paper before the Veterinary Medical Association "On the Anatomy of Trichocephalus Affinis, and in 1847 published a treatise "On Ringworm: its Causes, Pathology, and Treatment." It was in the latter year that he began his folio volume entitled "Portraits of Diseases of the Skin," a magnificent work, that, with the utmost diligence, was not completed until eight years afterwards—namely, in 1855.

In 1852 he published a volume "On Syphilis, Constitutional and Hereditary, and on Syphilitic Eruptions," and, in the next year, edited a translation of Hufeland's "Art of Prolonging Life," which went into a second edition in 1859. In 1858 he published, as the notes of an autumn tour in quest of a knowledge of the virtues of the mineral waters of the Continent, "A Three Weeks' Scamper through the Spas of Germany and Belgium, with an appendix on the nature and uses of mineral waters;" and, in 1861, appeared his work on "The Eastern, or Turkish Bath: its History, Revival in Britain, and Application to the Purposes of Health." In 1864 were published his "Student's Book of Cutaneous Medicine and Diseases of the Skin," and a "Statistical Inquiry into the Relative Frequency, the Duration, and Cause of Diseases of the Skin;" and in 1865 a tract appeared "On Food as a Means of Prevention of Disease." He contributed "Observations on the True Leprosy, or Elephantiasis, with Fourteen Cases," to the "Report of the Leprosy Committee of the College of Physicians;" and in 1867, established a quarterly periodical for the advancement of dermatology, the *Journal of Cutaneous Medicine and Diseases of the Skin*—the only Journal in Europe devoted exclusively to that department of medical knowledge.

In the pages of this Journal appeared a small work, written anonymously by a lady, entitled "Infant Life: its Nurture and Care," which was afterwards published separately, with a preface by Erasmus Wilson, wherein he laid stress on the necessity of attention to hygiene in the management of scholastic institutions, and expressed a belief that the diseases of children would disappear under proper nurture, and that "healthy children never suffer, never die from vaccination," if properly performed. Besides his more prominent works, the name of Erasmus Wilson is also to be found scattered through medical literature as the author of papers "On the Structure of the Ultimate Muscular Fibril of Animal Life," "On the Development and Growth of the Epidermis," and "On a Remarkable Alteration of Appearance and Structure of the Human Hair," communicated to the Royal Society; as well as of other papers on "An Organic Change of Structure of the Hair produced by Syphilis," "Eczema Infantile," "Thermo-Therapeia, the Heat Cure, or the Treatment of Disease by Immersion of the Body in Heated Air," "The Dermal Pathology of Celsus," "Dyschromatoderma or Discolouration of the Skin," "The Nature, Varieties, and Treatment of Eczema," "Lichen Planus," "The Question of Providing Medical Asylums for the Lepers imported in this country from our Colonies," "The Constitutional Origin of some Diseases of the Skin," "Hairs Growing upon the Tongue," "A Remarkable case of Pus-Concretions, with an explanation of their mode of formation," "A case of Hydatids on the Brain," and "The Minute Structure of the Mucous Membrane of the Alimentary Canal." In the *British and Foreign Medico-Chirurgical Review*, there are articles from his pen "On the Phyto-Pathology of the Skin," and

"On Nosophytodermata, the so-called Parasitic Affection of the Skin;" and in the "Cyclopædia of Anatomy and Physiology," the article "Liver" is from his pen, as also are the articles on Diseases of the Skin in the last edition of Cooper's "Surgical Dictionary," and in Grant's "Surgical Dictionary," as well as nearly the whole of the articles on Dermatology in Quain's "Dictionary of Medicine." A list of his works will be found in the appended bibliography, but so great is the number of his contributions to various publications, that no attempt is made to enumerate them. Nearly all are important, but the most considerable are named in this biography.

As a Dermatologist Erasmus Wilson acquired a world-wide reputation; he had a large practice, and his wealth grew, so that he became very wealthy. Sir James Paget, in unveiling his statute at Margate, in May, 1886, well expressed his position in regard to the public. "In this branch of practice," said Sir James, "he soon prospered. He made a large income and became rich, but he made his income fairly; he never extorted money. He never grasped at it, he never took it from the poor, he never pretended to more knowledge than he believed he had. The use of his wealth was in itself remarkable and rare. With a gradually increasing income, he scarcely increased his expenditure. He was contented with his happy home—always genial and good-tempered, happy and kind in the society of old friends, and constantly ready for any good work. And so he passed his time with scarcely any change in the old method of his living, and thus it was that his wealth grew unconsciously. His savings were prudently invested, and they increased without his knowledge; nay, without his counting. He gave his money without having counted it, and during the latter years of his life—in which the love of money is so apt to increase with men, that they have to guard against it as the greatest danger of life—he escaped the love of money altogether, and it is certain he never knew nor cared how much he had. He was one of the very few rich men who never flaunt their wealth before the world, nor worship it in secret as the idol of their life. He did not scatter his money broadcast in little sums among the needy, but he gave it carefully to persons or to purposes with which he might hold himself to be personally bound. He gave much to those to whom he was bound by old friendship, or to charities of which he observed the merit and the need; or, on the other hand, to the promotion of that knowledge in which he himself had been chiefly occupied."

His own profession and medical science have profited largely by his discriminating liberality. Thus, in 1869, he placed the sum of £5,000 in the hands of the Council of the Royal College of Surgeons for the purpose of founding a Professorship of Dermatology, the Incumbent of which was to deliver courses of lectures in the College Theatre, to be illustrated with wax models and diagrams, which he bestowed upon the College. A letter from the munificent donor, containing this offer, was read at a meeting of the Council on Thursday, the 11th of March, 1869. One condition and only was appended—that the best man should be selected for the office, whether a member of the College or not. It is not surprising that Erasmus Wilson was himself elected by the Council to the new chair, which he occupied for nine years. He also founded a Pathological Curatorship at the College of Surgeons, and a Professorship of Pathology in the University of Aberdeen—the latter at a cost of £10,000. To the College of Surgeons he also gave a remarkable collection of skulls from the Fiji Islands, brought together by Baron Von Hugel, which is of great anthropological value. He became a member of the Council of the College in 1870, and was President in 1881. In 1884 the Council awarded to him a special honorary gold medal, in recognition of his great liberality to the College. This medal, which was founded in 1880, has only been six times presented.

Another great act of Erasmus Wilson's bounty was the erection of a new wing to the Margate Sea-Bathing Infirmary, an institution, devoted exclusively to the treatment of scrofula, with which he had made acquaintance during his autumn holidays, and which was not far from his "Bungalow" at Westgate-on-Sea. He did not give at random to all hospitals, but he had seen the need of this enlargement, and generously provided £30,000 for the purpose. Besides many other acts of public munificence, he erected, in 1872, the Master's house at Epsom College, to which he gave liberally; and he restored, in 1873, the Church of Swanscombe, in Kent.

In his later years Erasmus Wilson devoted much attention to Biblical archæology and Egyptian antiquities, which he became thoroughly acquainted with; and to the furtherance of Egyptian research he contributed largely. His "Egypt of the Past" is one of the best popular histories of Egypt extant. He became interested in the obelisk called "Cleopatra's Needle," and in 1887 furnished the funds for bringing that interesting relic of antiquity to England. This obelisk, so long left half-buried in the sand at Alexandria, was acquired for Great Britain by Sir Ralph Abercrombie in 1801, and was offered to the British Government by Mehemet Ali Pasha in 1840. The Government, however, did not feel justified in undertaking its removal to England, because of the very great expense such a proceeding would involve. (The cost of placing the French obelisk in the Place de la Concorde was £80,000). Most readers will remember the circumstances of the bringing of the obelisk to England, and the melancholy event connected with its abandonment by the "Olga." A terrific gale and storm raged along our coasts and over most of the inland counties during the night of October 14th, 1877, which surpassed in its terrible violence anything that had preceded it for many years. The "Cleopatra," the iron box in which the obelisk was enclosed, was struck by the gale while crossing the Bay of Biscay in tow of the steamer "Olga," and was thrown on its side. Six men, sent in a boat to render assistance, were swept away. Then it was that the "Olga" slipped her towing cable, and steamed after the missing boat, leaving the "Cleopatra" and the monolith at the mercy of the elements. How the "Cleopatra" was afterwards sighted, drifting, ninety miles north of Ferrol, by the steamer "Fitzmaurice," towed into Ferrol, brought to London, and the needle placed in its present position on the Thames Embankment, are matters of history, chronicled among the remarkable events of the year 1877. A filial respect for his father, who was engaged in Nelson's Egyptian expedition, was one cause of Erasmus Wilson's desire to acquire the obelisk for his country. He published a little work "On Cleopatra's Needle," in 1878.

In the year 1881, in recognition of his services to medical science, and of his many charitable benefactions and public services, Sir Erasmas Wilson received the honour of Knighthood at the hands of Her Majesty. Many professional honours were showered upon him, and he was a member of a number of learned and scientific societies. He was an honorary LL.D. of the University of Cambridge, Vice-President of the Society for the Promotion of Biblical Archæology, and President of the Egypt Exploration Fund. He was a citizen of London, and Warden of the Curriers' Company, and had the freedom of the Turners' Company presented to him. In addition, he was a member of most of the Scottish Institutions in London, a Vice-President of the Scottish Corporation, and a Director of the Royal Caledonian Asylum. Last, but not least, he had presented to him the silver medal of the Royal Humane Society, in 1857, for saving the life of a drowning woman.

Sir Erasmus Wilson had been in ill-health for about two years before he died, and, for some time, was quite blind. However, on July 23rd, 1884, he was present at the consecration of St. Saviour's Church, Westgate-on-Sea, which he aided by his bounty. Within a few days he became seriously ill, and, on August 8th, he died, at his residence, The Bungalow, Westgate-on-Sea. He was buried at Swanscombe Church, Kent.

Sir Erasmus married, in 1841, Miss Doherty—the only child of Mr. James Doherty, an eminent conveyancer—who did not long survive him. He left no issue, and, as residuary legatees of his will, the Royal College of Surgeons became entitled, on Lady Wilson's death, to a sum of about £200,000, which is to be bestowed for the furtherance of medical science, and in the interests of the profession. He also left sums of £5,000 each to the Margate Sea-Bathing Infirmary, the Medical Benevolent College, and the Society for the Relief of the Widows and Orphans of Medical Men.

On May 25th, 1886, an admirable statue, by Mr. Brock, A.R.A., of Sir Erasmus Wilson, draped in his robes as President of the Royal College of Surgeons, which was presented to the Margate Sea Bathing Infirmary by Lady Wilson, was unveiled by Sir James Paget, in the presence of a distinguished company. This biography may appropriately close with the words used by Sir James on the occasion :—"I venture to hope," he said, "that when men come to look at this memorial of Sir Erasmus Wilson, they will look at it, not only as a beautiful work of art, but that they will be tempted to study what the life of the man has been, for it contained many excellent lessons which all would do well to learn."

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THOMAS WRIGHT,

M.D., M.R.C.S., F.R.S.

THE late Dr. Thomas Wright, Medical Officer of Health for Cheltenham, Charlton Kings, and Leckhampton, the distinguished anatomist and palæontologist, was born at Paisley, Renfrewshire, on November the 9th, 1809. He was educated at the Paisley Grammar School, and, before he had completed its curriculum, was articled to his brother-in-law, a surgeon and general practitioner, with whom he acquired an elementary knowledge of the natural sciences, showing, at the time, a predilection for biological studies. He resolved to excel in anatomy and physiology, as much from inclination, as from a belief which he often expressed, that, on a sound and extensive knowledge of those subjects, his future prospects in surgical and medical science would greatly depend.

Before the expiration of his articles, his brother-in-law removed to a practice in Ayrshire, which occasioned an interruption to his studies, and disarranged his course of life. It was now that a friend, who had observed his aptitude for acquiring a knowledge of facts, advised him to relinquish medicine, and apply his powers to the manufacturing arts, which were then in a very prosperous condition in the West of Scotland. He reluctantly consented to follow the advice, and pursued the course suggested. After a time, however, he discovered that the risk and speculation incident to a mercantile life did not suit his nervous temperament, and he relinquished the pursuit, and renewed his professional career with the determination to redouble his energies, in order to make up for the time he had lost in work for which he felt himself unfitted.

He now rejoined his brother-in-law, completing his articles, and prepared himself for entering the medical classes of the University of Glasgow. On making inquiry at the College, however, as to the facilities the students there had for pursuing practical anatomy, he learned that the difficulty which had long existed had lately been increased by a scandal that had occurred in Edinburgh, in reference to subjects that had been brought into an anatomical school in the city. Consequently, on the advice of his friends, he proceeded to Ireland, and entered as an anatomical and surgical student in the Royal College of Surgeons, Dublin, becoming the pupil of Professors Jacob and Harrison, and Drs. S. Benson and Houston in Anatomy, and Professors Colles and Willmott in surgery.

Yours very truly
Thomas Wright

On introduction to the College dissecting-room, his early liking for anatomy now rapidly developed into a passionate love for the subject, and he spent every hour of the day not engaged in attending lectures, during the winter and summer months, in the dissecting-room, where he rapidly acquired an extensive knowledge of anatomy, and became an accomplished dissector of all the most difficult regions of the human body. He was especially interested in the application of the microscope to that branch of study. The noise and bustle in the College rooms, however, during the winter months, became distasteful to him, and interfered so much with the study of the many minute dissections he had made, that he was induced for quietude to enter the Peter Street Anatomical and Surgical School, under Messrs. Kirby and Ellis, where he soon became Assistant Demonstrator, and the preparations and dissections used for Mr. Ellis's lectures were all made by him. On leaving the Peter Street School he received the highest credentials from Messrs. Kirby and Ellis, and, before he had passed the College of Surgeons, London, was offered by these gentlemen the Demonstratorship of the school, with the promise of the chair of Anatomy and Physiology within twelve months of his acceptance of their offer, Professor Kirby being about to retire from, and Professor Ellis to succeed to, the Surgery chair.

During the preceding winter, however, Dr. Wright had suffered much from a dissecting wound, and had unfortunately absorbed some variolous matter derived from the body of a boy who had died of confluent small-pox, a subject on which he had been lecturing for several days. This blood-poisoning gave rise to some grave constitutional symptoms, and a succession of axillary abscesses unfitted him for anatomical work. He was therefore obliged to decline the offer so handsomely made by Mr. Ellis. On returning health, he passed the College of Surgeons, London, in 1832, and graduated at St. Andrew's University in 1846.

Soon after passing the College Dr. Wright settled in Cheltenham, where his life was spent in the active practice of his profession, and where he was respected by all classes of society. Besides being Medical Officer of Health for eleven years, he was for fifteen years Surgeon to the Cheltenham Dispensary, and for upwards of twenty years Surgeon to the General Hospital. He was also for many years President of the Literary and Philosophical Society, during which period he delivered, in different sessions, several courses of lectures on Comparative Physiology, Natural History, and Palæontology. Dr. Wright was an earnest advocate of the teaching of natural science in colleges and schools, and was always ready to help in the cause of popular education whenever he was invited to do so; accordingly he lectured in Bristol, Bath, Worcester, &c., on subjects which have been his life-long study.

During the early days of his professional life he devoted much time to microscopical anatomy, but, in consequence of his eyesight suffering from close application to microscopy, he turned his attention to palæontology, and, as the oolitic rocks of the Cotteswold Hills, around Cheltenham, afford such rich material for study, he commenced to make a large collection of fossil echinoderms from these and other oolitic formations. Those who knew him only as a busy professional man, earnest in the labours of his practice, scarcely suspected that he was an enthusiastic naturalist also, and a worker who was doing much for the branches of geology and palæontology. He was a Member and Vice-President of the Cotteswold Naturalists' Field Club, and before that society he read a series of memoirs on the minute anatomy of certain fossil organisms, which were published in its *Proceedings* and in the *Annals and Magazine of Natural History.* These papers attracted the attention of Professor Edward Forbes, F.R.S., who spoke in high terms of their merits, and proposed that Dr. Wright should make a joint monograph with him on the British Fossil Echinodermata of the secondary formations for the Palæontographical Society; and it was finally settled that Forbes should describe and figure the Cretaceous, and Dr. Wright the Jurassic forms. Professor Forbes' death, however, just when he had obtained the ambition of his life, the chair of Natural History in the University of Edinburgh, and before he had done anything to his portion of the work, caused a change in its plans. On the completion of the monographs on the Oolitic Echinidæ, and the Oolitic Asteriadæ and Ophiusidæ, the Council of the Palæontographical Society requested Dr. Wright to undertake his late colleague's part of it. Thus in 1860 Dr. Wright commenced the description, with figures, of all the Cretaceous species, and for more than twenty years was engaged upon the subject, which he completed, and the work forms a large volume of 370 pages quarto, with eighty magnificent plates, being an enduring monument of its author's long and minute research.

But Dr. Wright did not neglect other departments of Jurassic palæontology. At the urgent solicitation of the Council of the Palæontographical Society, in the year 1875, he commenced an extensive monograph on the "Lias Ammonites of the British Isles." He had been collecting materials for this work for upwards of forty years, and had succeeded in securing a rare and beautiful series of these organisms, many of his specimens being carefully and judiciously selected to show the remarkable morphological changes through which Ammonites pass in the process of their evolution. The book was completed, and consists of 500 pages of text, and nearly ninety plates. It is a permanent landmark in the progress of Palæontology. Dr. Wright's palæontographical works, constituting four large quarto volumes, comprise 234 plates, accompanied by 1553 pages of descriptive letterpress. Each species has a full detailed anatomical description of its form, with its affinities and differences from congeneric species carefully pointed out, also the locality whence it was derived, and the stratigraphical distribution accurately defined, both of English and Continental rocks.

These labours occupied all his leisure hours for the last thirty years of his life. Much of this time was devoted to the collection of specimens, and the examination of private cabinets and public collections in British and foreign museums, in order to compare all our British species with Continental forms, and thus to bring our so-called species to the crucial test of a critical and personal examination. He made many journeys to the Continent to visit the grand collections in Paris, Stuttgart, and Tübingen, as well as that in the Geneva Museum, that of Zurich, and those of other collections in Switzerland. The accomplishment of this self-imposed task was the pleasure and delight of his life. For these works, and other memoirs on geology published in their *Quarterly Journal*, the Council of the Geological Society awarded Dr. Wright the Wollaston Medal.

A touching incident occurred in connection with Dr. Wright's "Lias Ammonites," which shows in a remarkable manner the vitalizing power of the will. During the progress of the work, he had been suffering greatly from heart disease and dropsy, and for fifteen months had been in much danger, nursed by his elder daughter day and night. One chapter of the monograph remained yet to be written, and, as one who was with him at the time remarks, he "seemed as if he *couldn't* die until he had completed it." Whenever a lull came, and pain and weakness permitted, he was wont to dictate a few lines, but at last, on a particular day, the heart became so feeble that his five medical attendants pronounced his end to be near. He could not keep the horizontal posture, and so was accustomed to sit upright in a chair. Suddenly, at eleven o'clock at night, he said "Bring me my pen; I *must* write the concluding page of my book. I don't think I shall live until the morning, and I *ought* to do it myself." The pen was given to him, and, as he wrote and mused, it was marvellous to see almost all trace of suffering vanish from his face; and thus, stimulated by the mind, his strength returned, the weak heart was invigorated, and the crisis passed; he slept peacefully as he had not done for weeks, and lived exactly a year afterwards.

Dr. Wright was elected a Fellow of the Royal Society of Edinburgh in 1855, a Fellow of the Geographical Society in 1859, and a Fellow of the Royal Society of London in 1879. He was President of the Geological Section of the British Association, at its Bristol Meeting, in 1875.

When the Health of Towns Commission Reports appeared, about 1842, on the Sanitary Condition of some of our large towns, Dr. Wright studied them with great diligence, and took a very lively interest in the important question of public health, and the means proposed for improving the same, a subject, be it observed, which was then just opening to public gaze. Dr. Wright foresaw its significance, and kept himself constantly posted up in all the suggestions that were from time to time put forth to make the public alive to its importance. He published many articles in the news-papers, and gave lectures in several institutions, with the view of popularizing the theme, and of teaching the necessity of a more general knowledge of sanitary laws than prevailed at that time. In 1863, in compliance with a resolution of the Cheltenham Improvement Commissioners, "that Dr. Wright be and is hereby requested to assist the surveyor in ascertaining whence an additional supply of water can be obtained, and that compensation for his services be paid him," he became practically engaged in the very van of sanitary progress. As he had been long practically acquainted with the geology of the Cotteswold Hills and of other sources of water in the county of Gloucester, he lost no time in applying his geological knowledge in directing his inquiry to the various springs flowing from the strata round Cheltenham, and furnished an exhaustive report on the subject, recommending the Dowdeswell Valley and the springs flowing into the Chelt, as the most available source for practical purposes.

In 1873 the Commissioners of the town of Cheltenham and the Local Boards of Charlton Kings and Leckhampton, unanimously elected Dr. Wright to be their first Medical Officer of Health, which position he held until his death. The terms of his appointment rendered it necessary for him to retire from private practice, and after assuming his official position he devoted all his time to sanitary and general science.

Dr. Wright's literary labours were continuous, and he wrote a number of valuable monographs, which will be found enumerated below. At the time of his death he was engaged upon a monograph on the British Cretaceous Starfishes, which he had nearly completed.

Dr. Wright was twice married; first to Elizabeth, eldest daughter of Captain Vincent May, of Liverpool, who died without issue; secondly to Mary, youngest daughter of the late Admiral Sir Robert Tristram Ricketts, Baronet, D.C.L., of The Elms, Cheltenham, who died in 1878, leaving one son, Thomas Lawrence Wright, M.A., of St. John's College, Cambridge, and two daughters, both of whom are married; the eldest to Mr. Edward Wethered, F.G.S., F.C.S., and the second to the Rev. Charles Byron Wilcox, vicar of St. Judes' Moorfields, Sheffield. Dr. Wright died on November 17th, 1884, and was buried at Cheltenham.

His private character has been so well drawn by the sympathetic hand of Professor Geikie, in an obituary notice which appeared in *Nature*, that we cannot do better than give an extract here:—"To a narrower but still a wide circle," says the Professor, "his removal from among us is the loss of a leal-hearted friend. Those who were thus privileged will cherish the memory of that cheery face with the bright twinkle of eyes that were as brimful at one time of merriment as, at another, they were suffused with sympathy; the joyous laughter that rang out clear and strong from a heart in which there was no guile; the earnest brow and hand upturned behind the ear as the talk went on over his favourite pursuits ; the bursts of enthusiasm as some new fact or novel deduction dawned on him, and the play of humour that was ever ready to break out like a beam of summer sunshine. Dr. Wright made his final expedition in August last year, when he joined the writer of these lines in the Island of Arran. Already the symptoms of his fatal malady had shown themselves, and he knew what they foreboded. But he carried with him nevertheless his characteristic sunniness of nature. Seated on the bare mountain side, with the purple heather and yellowed bracken around him, the sea in front, and his own native Renfrewshire hills in the blue distance, he became almost a boy again as he told his reminiscences of old times, and watched the sports of children among the grey boulders. Ripe in honours as in years, it seemed as if he had come back to his early northern air to drink it once more, and review his past before he should quit us for ever. He would saunter for hours in the quiet glen, with no companion but his own thoughts and the sights and sounds of Nature, which were an ever-gushing fountain of pleasure to him. Cherished is every memory of him, but most of all those parting days spent with him at the foot of the mountains and by the shores of the restless sea."

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